

RECORD COPY

MANAGEMENT OF AGRICULTURE

IIPA LIBRARY



10233

79-10233
20.409
1



INDIAN INSTITUTE OF PUBLIC ADMINISTRATION
INDRAPRASTHA ESTATE, RING ROAD
NEW DELHI-110002

PRICE : { India : Rs. 70.00
Abroad : £ 12.00 \$ 20.00

©

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION
NEW DELHI

MARCH, 1979

Printed at : Satish Composing Agency, 910 Jatwara, Daryaganj,
New Delhi-110002 (India).

Contents

	<i>Page</i>
PREFACE	ix
CONTRIBUTORS	xi
INTRODUCTION	xiii
THEME PAPERS	
ISSUES IN THE IMPLEMENTATION OF AGRICULTURAL PROGRAMMES <i>B. SIVARAMAN</i>	1
NATIONAL AGRICULTURAL POLICY AND MAJOR AGRICULTURAL STRATEGIES AND PROGRAMMES IN INDIA <i>C.H. HANUMANTHA RAO</i>	20
AGRARIAN SOCIAL STRUCTURES AND AGRARIAN RECONSTRUCTION PATTERNS IN ASIA <i>P.C. JOSHI</i>	35
RESOURCE ENDOWMENT UTILISATION: A PLEA FOR THE INTEGRATED MANAGEMENT OF LAND AND WATER RESOURCES <i>B.B. VOHRA</i>	55
ELECTED BODIES AND AGRICULTURAL DEVELOPMENT IN INDIA <i>R.N. HALDIPUR</i>	67
DATA PROBLEMS IN MANAGMENT OF AGRICULTURE <i>SHREEKANT SAMBRANI</i>	81
INFORMATION AND MONITORING IN AGRICULTURE <i>J.C. SARMA</i>	93

	<i>Page</i>
EVALUATION OF AGRICULTURAL PROGRAMMES	
<i>A.P. BARNABAS</i>	108
COUNTRY PROFILES	
COUNTRY NOTE ON BANGLADESH AGRICULTURE	
<i>M. NURUL HAQUE MIAH</i>	127
AGRICULTURAL DEVELOPMENT STRATEGIES IN BANGLADESH—REVIEW AND FUTURE POLICIES	
<i>WALIUL ISLAM KHAN</i>	142
✓ COUNTRY NOTE : INDIA	
<i>R.C. SOOD</i>	152
SHORT DESCRIPTION OF THE STATUS OF AGRICULTURAL POLICIES AND THEIR IMPLEMEN- TATION IN INDONESIA	
<i>H.M. RUMAHORBO and NATIGOR SIAGIAN</i>	161
ANALYSIS AND MANAGEMENT OF INDONESIAN AGRICULTURAL DEVELOPMENT	
<i>PANOEDJOE, A.T. BIROWO and WAHYUDI SUGIYANTO</i>	172
MANAGEMENT OF AGRICULTURE IN JAPAN	
<i>CHUJIRO OZAKI</i>	187
MANAGEMENT OF AGRICULTURE IN KOREA	
<i>SUNG HWAN BAN</i>	209
SAEMAUL UNDONG—NEW COMMUNITY MOVEMENT	
<i>SUNG HWAN BAN</i>	239
MANAGEMENT OF AGRICULTURE IN MALAYSIA	
<i>AHMAD SARJI BIN ABDUL HAMID</i>	248
AGRICULTURAL ADMINISTRATION IN MALAYSIA	
<i>M. LAKSHMISWARAMMA</i>	297

MANAGEMENT OF AGRICULTURE IN PAKISTAN <i>M. SADIQ MALIK</i>	319
MANAGEMENT OF AGRICULTURAL DEVELOPMENT: THE PHILIPPINE EXPERIENCE <i>ABELARDO G. SAMONTE and GERONIMO M. COLLADO</i>	351
ADMINISTRATION FOR AGRICULTURAL DEVELOPMENT IN THAILAND <i>B.M. VERMA</i>	392
MANAGEMENT OF AGRICULTURE IN SRI LANKA <i>MAHINDA SILVA</i>	408

DISCUSSION NOTES

INDIAN AGRICULTURE: PRIORITIES, PROGRAMMES AND INTERFACES <i>B. VENKATAPPIAH</i>	457
MAJOR DIMENSIONS OF PROGRAMME MANAGEMENT IN AGRICULTURE <i>NITISH DE</i>	460
RURAL INSTITUTIONS IN AGRICULTURAL DEVELOPMENT—SOME ISSUES <i>KULDEEP MATHUR AND S. WANASINGHE</i>	463
NATIONAL AGRICULTURAL POLICIES—A FEW ISSUES FOR CONSIDERATION <i>R.N. HALDIPUR</i>	465
IDENTIFICATION OF INTERFACES FOR AGRICULTURAL DEVELOPMENT AND PRIORITISATION <i>R.N. HALDIPUR AND M. BHATTACHARYA</i>	468

BIBLIOGRAPHY

BIBLIOGRAPHY <i>MOHINDER SINGH and R.N. SHARMA</i>	471
---	-----



Preface

Agricultural development has in recent years received considerable attention from the governments in the Asian region. It is widely recognised that the performance in the agricultural sector has not been adequate.

Many changes in the national strategies of development are occurring in order to facilitate a quicker pace of agricultural development. There is also a growing realisation that the managerial and administrative capability of the officials planning and implementing agricultural programmes and projects has to be enhanced considerably to achieve national development objectives. A variety of measures are being adopted for this purpose. Among these, training has been accepted as a critical method to prepare senior public servants for their new role as managers in agricultural development.

In this connection, the UN Asian and Pacific Development Administration Centre, Kuala Lumpur sponsored a programme in Management of Agriculture during September 6-24, 1976, in New Delhi, in collaboration with the Indian Institute of Public Administration. Senior officials working in the ministries or agencies concerned with agricultural development from several Asian countries participated in the programme.

Several papers were presented for discussion during the programme. The participants themselves brought with them their own country profiles. Certain papers were commissioned specially for the purpose of providing background for the discussion, while short notes were also prepared. These constitute this book.

I trust that the papers in this publication will prove useful and interesting to all those who are concerned with improving the performance in the agricultural sector.

I would like to express my deep appreciation of the help and cooperation of Asian and Pacific Development Administration

Centre, Kuala Lumpur and particularly of its Director, Shri B. Mahadeva in bringing out this publication. I would also like to thank the authors of the various papers who took time off from their heavy schedules to contribute for this Programme.

In the preparation of this volume, my colleagues Prof. Kuldeep Mathur and Dr. K.N. Kabra were very helpful. I am grateful to them.

The bibliography is compiled by Shri Mohinder Singh and Shri R.N. Sharma with the assistance of Shri K.P. Phatak, Mrs. S. Bakshi and Mrs. M. Lakshmiswaramma. I am grateful to them all.

Shri N.R. Gopalakrishnan and his team in the Publication Section deserve my thanks for seeing the volume through in the press.



(R. N. HALDIPUR)

Director

Indian Institute of
Public Administration

New Delhi
January 1, 1979

Our Contributors

Theme Papers

- MR. B. SIVARAMAN—Member, Planning Commission, New Delhi.
- DR. C.H. HANUMANTHA RAO—Professor, Institute of Economic Growth, Delhi University, Delhi
- DR. P.C. JOSHI—Professor, Institute of Economic Growth, Delhi University, Delhi.
- MR. B.B. VOHRA—Secretary, Petroleum, Government of India, New Delhi.
- MR. R.N. HALDIPUR—Director, IIPA, New Delhi.
- PROF. SHREEKANT SAMBRANI—Professor, Indian Institute of Management, Ahmedabad.
- MR. J.S. SARMA—Secretary, National Commission on Agriculture, New Delhi.
- DR. A.P. BARNABAS—Professor of Sociology and Administration, IIPA, New Delhi.

Country Profiles

- MR. M. NURUL HAQUE MIAH—Chief, Agro-Economic Research, Ministry of Agriculture, Government of Bangladesh, Dacca.
- MR. WALIUL ISLAM KHAN—Deputy Chief, Agricultural Economic Section, Agriculture Division, Planning Commission, Ministry of Planning, Government of Bangladesh, Dacca.
- MR. R.C. SOOD—Joint Secretary-cum-Extension Commissioner, Ministry of Agriculture & Irrigation, Government of India, New Delhi.
- MR. H.M. RUMAHORBO—Staff, Bureau of Planning, Department of Agriculture, Jakarta.

MR. NATIGOR SIAGIAN—Chief, Regional Cooperation Sub-Division, Bureau of Planning, Ministry of Agriculture, Jakarta.

MR. PANOEDJOE—Indonesia.

MR. A.T. BIROWO—Indonesia.

MR. WAHYUDI SUGIYANTAO—Indonesia.

MR. CHUJIRO OZAKI—International Development Center of Japan.

PROF. SUNG HWAN BAN—Associate Professor in Agricultural Economics, Seoul National University, Seoul.

MR. AHMAD SARJI BIN ABDUL HAMID—Director General, Farmers' Organisation Authority, Malaysia, Kuala Lumpur.

SMT. M. LAKSHMISWARAMMA—Research Associate, Indian Institute of Public Administration, New Delhi.

MR. M. SADIQ MALIK—Joint Secretary, Rural Development Wing, Ministry of Social Welfare, Local Government and Rural Development, Government of Pakistan, Islamabad.

PROF. ABELARDO G. SAMONTE—Professor of Public Administration and Chancellor, University of the Philippines, Los Banos.

PROF. Geronimo M. COLLADO—Assistant Professor, Agribusiness, University of the Philippines, Los Banos.

MR. B.M. VERMA—Training Associate, Indian Institute of Public Administration, New Delhi.

MR. MAHINDA SILVA—Sri Lanka.

Discussion Notes

DR. B. VENKATAPPIAH—Chairman, Rural Electrification Corporation, New Delhi.

MR. NITISH DEY—Director, National Labour Institute, New Delhi.

PROF. KULDEEP MATHUR—Professor of Behavioural Sciences, Indian Institute of Public Administration, New Delhi.

MR. S. WANASINGHE—Special Technical Adviser, Project Operations Office, UN ESCAP, Bangkok.

DR. MOHIT BHATTACHARYA—Professor of Organisational Analysis, IIPA, New Delhi.

Introduction

The Regional Programme on Management of Agriculture sought to emphasise the role of agriculture in the development of countries in the Asian region. It is now generally agreed that a major bottleneck in the overall development process in most countries of the region has been the inadequacy of agricultural production, particularly in the area of food. Even though the bulk of the population has been engaged in food production, it has somehow failed to feed the growing population of the developing countries of this region and has not been able to provide adequate support to other development efforts.

The renewed emphasis on agriculture has given a special place to self-reliance in food production. It demands a closer examination of the problems and issues involved in the management of agriculture and the relationship of agricultural development to the achievement of national development goals. The management of agriculture has necessarily to be viewed in a much wider perspective than has been done hitherto. Agriculture, being a large and complex sector, would not meaningfully respond to analysis if it is viewed solely from any one dimension.

Those who are responsible for the management of agriculture at the national level in the developing countries of the region face a highly complex set of problems, in that they are required to evolve and implement policies to achieve the objectives of agricultural development and at the same time to review strategies constantly, to maintain consistency within the overall goals of national development, in a rapidly changing socio-political, technological, and international economic environment.

Keeping this complexity in view, the Programme was designed to identify and discuss the varying dimensions of agricultural development policies and strategies and of their implemen-

tation processes. The background of the discussions was formed by the elaboration of the concepts and strategies of overall development and their inter-relationship with the national agricultural policies. The Programme then attempted to outline the critical issues that arise in developing meaningful and realistic policies and determine the courses of action which are harmonious with the policy objectives. Subsequently, the Programme sought to raise some key organisational factors and processes in the management of agriculture.

The papers being published in this volume were meant to facilitate this discussion within the overall frame delineated earlier. The first set of papers entitled 'Theme Papers' has been written by both administrators as well as academicians. The administrators have brought to bear their wide experience in the field while the academics have helped in relating these practical problems to the larger conceptual and theoretical issues.

For example, Shri Sivaraman has surveyed the problems of agriculture in the whole region and shown how the technical and technological problems are closely linked with the ability to link managerial practices with the situation obtaining in the field. On the other hand, Prof. C.H. Hanumantha Rao takes a wider perspective in showing how the national policies themselves determine to a great extent the actual achievements in the field. Between these two contributions lie the discussions of land reform as a strategy for agricultural as well as overall development and enunciation of specific techniques, and the quality of the data base for better management of agriculture.

The second set of papers are 'Country Reports'. Each participant of the Programme had been requested to bring with him a paper describing the status of agricultural policies and their implementation in his own country. The prime purpose of these types of papers was to exchange information and provide a basis for learning from another country's experience.

The final group of papers are in the form of short notes which were prepared in order to initiate discussions. They raised issues without elaborating them.

Several of these papers are of general application while others deal with the peculiar problems of the respective countries in the region. Similarly, the topics discussed in these

papers cover a wide area of agricultural development activities, assuming that such activities can be for increasing farm production or for better land use or again for bringing about social justice through the redistribution of holdings. However, the entire set of papers brings one point clearly to the forefront: Better management practices in agriculture are crucial to agricultural transformation.

Theme Papers



B. Sivaraman

Issues in the Implementation of Agricultural Programmes

Basic agriculture of a country is a function of the involvement and enterprise of the farmers of the country in exploiting the capital resource 'Land'. It is also a function of the state of agricultural science in the country and the capacity of the farmers and the nation to find capital for investment in development of the infrastructure for agriculture. Agricultural development will be a function of the speed with which agricultural science can develop in the country and the speed with which such knowledge can be transferred to the farmers for practical application. Development will also be a function of the capacity of the country to find the capital resources and the ways and means resources for exploiting the scientific potential which generally is capital and resources intensive. Within this broad frame we have the socio-economic constraints for action which can be unique for each country and may not be brought within a general framework of comprehension.

The Seminar is being attended mostly by the countries of South East Asia. This analysis, therefore, restricts itself broadly to the problems of South East Asia. Some of the conclusions may be of general application. Some may be peculiar to the situation in South East Asia and may have to be adapted to other conditions in other countries. South East Asia is in the tropical belt and is one of the most populous areas of the world. Generally, the average holdings in the countries of this zone are small. Even if in some countries like Indonesia and Thailand the available arable land may show a reasonably high average per family holding, this statistics is, in a way, illusory. In these countries the bulk of the population is concentrated in the paddy belts of Java in Indonesia and Central Thailand in Thailand. The other areas are sparsely populated and not yet

exploited. We can call this generally the paddy belt of the world. The concentration of operational holdings in the paddy belt is such that the average holdings are very small. Barring countries like India, Bangladesh and Pakistan where the prospects for bringing any further area into cultivation is rather limited, the other countries of South East Asia have still got the capacity to bring new land into agriculture. Even then, considering the rapidly rising population, we can take it as a general premise, that the agriculture of this zone has to be small farmer oriented.

The traditional agriculture in this zone is subsistence farming. Land ownership of cultivable lands is highly skewed. Absentee landlordism is also high. As a result, there is substantial tenant farming. Even if, as in India, tenantry has been substantially abolished, it will be found that in fact there is a high percentage of hidden tenancy. These basic facts create certain deep economic problems which have to be solved before we can really embark on agricultural development. Subsistence farming is highly labour oriented. The traditional equipment are extremely traditional and may have long outgrown their utility. Investments in inputs like fertilisers, etc., are marginal. The type of agriculture has, by long experience, adapted itself to a system which is an insurance against climatic variations. Varietal choice of the crops depends upon factors like drought resistance and a minimum return in the crop in adverse conditions rather than on the high-yielding characteristic of the new technology which requires control of environment. The subsistence farmer having got to live from hand-to-mouth is not in a position to take any risks. He has also no spare cash to invest for better farming. In fact, the subsistence farmer is dependent even for his consumption requirements during the cultivation season for credit from the moneylender. On the other hand, agricultural development can take place only with adoption of new technology, the technology requires control of environment like provision of irrigation, moisture control, pest control, etc., all of which require investment first before return can be achieved. The problem of the planners, therefore, is how to get this zone with a substantial preponderance of subsistence farming to adopt improved technology.

The large scale tenantry problem creates another stumbling block to progress. The tenant has to pay a substantial portion of the produce of the land as rent to the land owner. Traditional practice all over has been for the landlord to claim a fraction of the gross produce. India attempted to control the tenancy situation by legally prescribing a maximum share beyond which it was illegal to claim a landlord's right. It was also proposed more than 15 years ago that rent should be fixed in cash so that the tenant is not at the mercy of the landlord in the sharing process. In spite of this the experience has been that along with hidden tenancies even where tenancies are legal, the traditional practice of claiming a share of the produce continues. Land hunger and the need to find employment is so high throughout this zone that it is reasonable to expect this phenomenon to survive. Studies carried out in India have shown that where the traditional share of half the crop prevails the tenant in most cases does not even get back from the harvest a fair remuneration for the labour he has put in for raising the crop. On the other hand, the landlord also feels hurt that he is not able to make a better deal. Countries like the Philippines and Thailand have tried to get over this problem of traditional agriculture and crop sharing by encouraging the system of the landlord sharing the costs of cultivation. This has, no doubt, to some extent, improved the return that the tenant gets out of his efforts. It, thereby, provides some incentive to improve and to invest in the new agriculture. Even then, when the problem of basic capital investment in irrigation facilities arises, there are still difficulties. Investment in irrigation has to be long-term whereas a tenancy is a short-term feature. Broadly, the economists reaction to this problem is to press for land to the tiller, thereby enabling the tiller to make the necessary economic investments to increase production and his profits. This has been the basis of land reforms in India. There are various political constraints and this remedy may not be easily applicable in the situation in several countries. This is a basic limitation.

Much of South East Asia is in the monsoon zone. This means that the rainfall is concentrated in a few months in the year. For the rest of the period, rainfall is scanty and generally uncertain. The monsoon areas can also be divided into those

where a reasonable precipitation can be expected and those where the total precipitation is low and highly variable. In this environment, traditional agriculture has developed various crops suited to each area. Crop development has normally been on selection basis from existing crops in the area. Till very recently there has been very little exchange of varieties between countries not to mention even between small administrative areas within a country. As crop improvement had depended on the selection process, the farmers never had an opportunity to test and judge the merits of many possible alternative varieties. For example, the entire approach today in rice development is based on photo insensitive crops. In India, when the Green Revolution was introduced, it was found that there were large areas in the country where photo-insensitive crops were not known. Rice cultivation depended on photo-sensitive crops. It was also found that the photo-sensitive crops used, for example, in the State of Bihar matured very late. The monsoon rainfall generally stopped two months ahead of the ripening of the paddy. As a result, paddy yields were generally poor. The first problem of agricultural development in many areas, will, therefore, be bringing before the farmer various alternatives which will be better under the agro-climatic situation of his area than the traditional varieties and crops that he grows. Today, agricultural science can, using meteorological data and analysis, soil analysis, evapotranspiration analysis and the prevailing seasons, select crops and varieties which will be most profitable and most productive for the various zones of a country. This theoretical work can generally be done very accurately. An effective extension organization, by suitable adaptive research, can also establish the utility, the profitability and the productivity of alternatives to the existing cropping pattern. The crux of the problem arises when such results have to be translated in a large scale by the farmers as an accepted programme.

In a subsistence economy every farmer tries to grow the basic food crop of the area. The basic food crop generally is one which traditionally is found in the area and which by long selection process has been adapted most to the environment. By long habit the people of the area have adapted their consumption patterns to the main cereals growing in that area,

It can well happen that there are better varieties of the prevalent food crop which are not native to the area but which, if introduced in that area, can fit better to the agro-climatic situation. Then it may be a case of good extension service only for the transformation to happen. On the other hand, it may be found that there are other cereals not native to the area or which are minor in area which can probably do much better under the agro-climatic conditions. For example, it has been found in the district of Mirzapur in the State of Uttar Pradesh in India that the porosity of the soil and the average rainfall pattern will support a crop like maize or sorghum rather than rice which is the traditional crop at present. It can also happen that not all parts of the area is best suited for the local food crop. There may be areas where other cereals can grow better. In both these situations, can we change the cropping pattern to the economic optimum? Changing the food habit is one of the most difficult social transformations to handle. There is the matter of taste and the matter of technology. This can stand a little detailed analysis. During the last war, there was food shortage in this country. India's normal sources of rice imports were lost. The country had to do with import of wheat and sorghum. South India which is a rice eating area had to take a lot of wheat in the ration in the townships. Wheat is normally eaten in the form of chapatis (unleavened bread). The South Indian had two difficulties. For the rice diet he had developed a whole system of additives to make the diet palatable. This had a preponderance of tamarind and chillies. Use of pulses in the South was very low. A taste preference was for a sharp taste. Chapatis which is the food of the North goes with a lot of pulses and vegetables. The taste is mild. The difficulties of adjustment are obvious. The South Indian tried to take out of the wheat fractions like semolina and flour which he was used to in small quantities. As a result, the bulk of semolina and flour fractions were removed from the wheat and the resultant residue which was substantial was not generally fit for the human consumption. In the North, the bulk of the wheat is taken as ground atta which is used for making chapatis. This created problems of waste of food material. Last but not least, for making chapatis additional equipment was needed. Chapati making did not go with

the regular type of oven and the fuel used in the South. The average housewife had to learn an entirely new technology and also invest in equipment. She avoided the problem by trying to use wheat exactly as rice is. This made acceptability more difficult for the consumer. It has taken two decades for the South Indian in the townships to adapt himself to a partial wheat diet. In the rural areas, even this change has not taken place. This is one side of the picture.

Nearly a century ago, one of the rulers of the States in Kerala in India introduced tapioca from the West. This crop suited the terrain and the rainfall beautifully. It did not interfere in many cases with other crops. Together with fish which is in abundance in the area and together with the system of cooking which is mainly a steaming process, the local people adapted themselves rapidly to this new diet. They also made the resultant diet highly nutritive. Within a hundred years, Kerala is now consuming about 5 million tonnes of tapioca. Two years ago, in Tamil Nadu another State of India, a crash programme for development of tapioca was introduced. The first crop came into the market at a time when there was a serious drought (drought of a century) in Tamil Nadu. The price of rice shot up four-fold. Tapioca was available at half the price which rice used to sell at, previously. The poorer people adopted their diet seeing the way Keralites cooked tapioca. Not only was the crop sold out, but the change has given big fillip to tapioca development in Tamil Nadu. This shows that given certain basic incentives and having a native capacity to adjust and innovate new crops can be introduced into areas with success.

Another aspect of this problem was handled in the district of Coimbatore in the State of Tamil Nadu in India. One of the ingredients of the Green Revolution was introduction of high-yielding maize strains. Maize production was highly successful in the district of Coimbatore. The local population did not know how to use maize. A campaign was launched through village women's organisations with the help of Extension staff and a radio programme. New methods of using maize were taught to the women. Grits and maize flour were both adapted into the diet system as cheaper replacements for semolina and wheat flour from wheat. There was rapid absorption of maize

in the diet. As a result, production of maize has gone up in Tamil Nadu. In certain areas it was much more suited to agro-climatic conditions and available water than rice which used to be the alternative crop. Here is another method of introducing a change in cropping and diet. We can sum up the discussions by pointing out that if any planner wants to introduce a new crop he has to take note of the basic constraints and find out the acceptable methods for change of diet and change of technology and also evolve an extension programme and assistance which will allow for rapid translation of the new food ideas.

The new crop that is best suited to the agro-climatic conditions of an area may not necessarily be a cereal. It can be a pulse, an oilseed or a cash crop like jute or cotton. If the farmer has to adopt any of these alternatives to the food crops that he was used to, he is faced with big problems. If a farmer does not grow his own food, in many rural parts of this zone he will find it difficult to get the foodgrains at anything like a reasonable price when he needs it. Because of a subsistence economy in many part of the rural areas there is not enough incentive for a commercial marketing system to develop. As a result, many rural areas do not have the facility of buying foodgrains, when required, in the local market. Nobody likes to take risk with his food. The first requirement therefore, of a change of the cropping pattern is an active marketing system which can guarantee supply of foodgrains at fair prices in the locality. Not only that, the lack of a marketing system also prevents the farmer from getting full value out of the new crop that he grows. Oil seeds, pulses and cash crops are all commercial crops which are handled by the trade in any country. The trade concentrates in areas of intensive production of these marketable commodities. New areas which come into the production system will, therefore, not have any established marketing organisation for these crops. In India, there is history of introduction of new crops like cotton in Orissa, soyabean in Madhya Pradesh, sunflower in middle-India and so on where many initial experiments flopped because the farmer was left with the crop, without a buyer.

A cash crop generally requires more labour force per acre than the traditional cereal cultivation in this zone. There are

intensive operations like weeding, picking, etc., which require much more intensive manpower than what a subsistence farming family can provide out of the family members. When the traditional agriculture has been generally of the subsistence kind, it may be found that any large scale transformation of the area to cash crops which may be both remunerative and more successful than the cereal crop, is not possible because of lack of labour for the crucial operations.

In her book "The Design of Rural Development—Lessons from Africa", Uma Lele has pointed out how in Africa these constraints have affected introduction of new crops. She has also pointed out how this basic constraint also effects availability of labour for cash crop cultivation in Africa. She explains the problem as follows:

"To what extent were these and other factors that influence labour availability taken into consideration in planning the commodity projects? The labour availability in small-holder agriculture is closely related to the desire of subsistence producers to ensure domestic food needs. The food constraints can be attributed to two factors frequently noted in the traditional African agriculture: (a) the generally high risk and low profitability of food technology which ties up quite substantial amount of labour in food crop production; and (b) the fragmented market systems for food crops which necessitate priority on food production to ensure supply for domestic consumption."

This shows that any planner seeking to adjust the cropping system to the economic objective will have to deal not only with production but marketing and requirements of labour.

In South East Asia it will generally be found that remunerative cash crops can be grown in several areas where at present marginally efficient food crops are grown. Further, in countries like Indonesia and Thailand where large virgin lands are still available for reclamation and cultivation it will be found that cash crop production will be the most remunerative approach to agricultural development. In all these cases, marketing becomes a primary factor for agricultural development. The normal traditional marketing organisations will either have to be persuaded to enter into these areas by giving them suitable incentives or new systems of marketing either cooperative or

State will have to be developed. Too much emphasis on any one of these channels create their own problems of inefficiency. The African states have shown that an excessive reliance on state organisations can create problems of their own.

Cash crop cultivation must have a developed processing industry to enable the country to get maximum return out of agricultural production. Processing may have to be for internal consumption or export. Generally, additional cash crop production in the South East Asia will have to be for the export market. This leads to the need for an effective export promotion organisation. Thailand has, during the last few years, successfully developed tapioca and maize cultivation for the export market. On the other hand, there are fears that additional plantation production in this zone may suppress prices and create complications for basic production. A continuous appraisal of export availability and methods of absorption of production in order to maintain an economic price has to be in-built in the system of agricultural production.

To the average reader the Green Revolution is synonymous with the high-yielding varieties of seeds. The miracle rice of the International Rice Research Institute developed under the leadership of Dr. Chandler and the Mexican Wheats evolved under the leadership of Dr. Norman Borlaugh in Mexico both of which came into South East Asia at about the time of the great drought, caught the imagination of the farmers. The response of the farmers to the introduction of these new varieties and the quickness with which they absorbed some of the new techniques necessary for the high yielding varieties set the pace for substantial research activity in this zone. Whilst the high yielding varieties of seeds was, no doubt, an important ingredient of the Green Revolution, it was not the only component of the Green Revolution. The high cost-benefit ratio inherent in the use of the high yielding varieties led to a capacity in the extension organisation of this zone to induce the farmer to accept management practices which can lead to better return. The use of high yielding seeds itself involved adoption of management practices and, therefore, helped in establishing a package approach to agriculture. It was only one step more to get across generally the idea of package approach in agricultural management for crops.

Agricultural science today is capable of inducing agricultural development by establishing means of better management of crops so that with no change in the cropping pattern of an area growth can be stepped up by sheer better management practices. This is the cheapest of the transformation patterns one can use, but it requires a highly technical extension organisation. The methodology to suit an agro-climatic zone and the type of crops grown has to be developed by intensive adaptive research in the zone itself. Demonstrations will have to be laid down on the farmer's fields with his cooperation. Where any area agrees to adopt the practices, a guiding team will have to be enabled to closely work with the farmers. The team will have to be knowledgeable enough to deal with aberrations of nature during the experiment. An effective organisation to assist comprehensively an area of the country requires field workers with a general comprehension of agricultural science supported by subject-matter specialists in various disciplines at higher levels. The whole set-up has to be backed up by research expertise in the country. In the Philippines, the Masagana-99 Project has envisaged one extension worker for 150 holdings. In India, in the Rajasthan project, the coverage attempted is one worker at the field for 320 holdings. The entire South East Asia being a small farmer complex, the number of experts of various kinds to support agricultural development will be astronomic. Obviously, no country can afford a structure of the magnitude, variety and numbers required to cover the country immediately. Countries are working with various types of extension programmes. The transformation to modern agriculture can itself be phased into various levels of technology transfer. It is essential for every country to judge its capacity to provide the scientific backstop to any programme of development and then opt for the type of transformation which can be fully supported with the facilities available. It may be found that it is not the level of experts that is available in the country which will be a constraint, but the number of experts at various levels. The greatest difficulty obviously will be at the level of field experts with their first level of support, the subject-matter specialists. These two levels of expertise requiring large numbers cannot be developed by a country overnight. A long-term planning of academic institutions

and training programmes to turn out such experts over a period of time has first to be established. It is much easier to train the top level scientists and administrators. In this sector, international cooperation is available and education is at a fairly high level in the countries of this zone to enable prospective leaders to be selected and suitably trained. Experience in agricultural development in various parts of the world particularly in the developing countries shows that by opting for a method of development which cannot be supported by sufficient indigenous expertise, countries have got into difficulties.

The Green Revolution in South East Asia started with the introduction of the Mexican Wheats in India and Pakistan and the introduction of new rice varieties from the International Rice Research Institute in the Philippines. India has also developed in the meanwhile high yielding double hybrids of maize following the development of maize in the West and had also started on hybridisation schemes in sorghum and pearl millet using male sterile lines developed in the West. India had also developed long-staple cotton strains based on its own technology. However, the bulk of the technological backstopping for the Green Revolution in the South East Asia sprang from technological developments in the West, for Western countries and technology for rice developed in the Philippines by Dr. Chandler on purely plant characteristics. It has been recognised that of all the technologies, the most difficult to transfer on international basis is agricultural technology. The agricultural technology is so much location specific that fundamental research and technology has no meaning without intensive applied and adaptive research suited to the agro-climatic and socio-economic conditions of the location. After the first flush of the wonder rice and the great hopes placed on the Green Revolution, one had to come to a reluctant conclusion that unless the new technology is developed and refined for the specific problems of the country and its regions, the development will only be a flash in the pan.

The new technology in wheat and rice and the developments in maize and sorghum and pearl millet in India was based on a fragile base of one or two basic germ plasma. The wheat revolution depended on the Mexican strains two or three in

number. Rice was dependent almost entirely on the basic germ plasm of Deo-geo-wo-gen. Maize was a little better placed than sorghum and pearl millet where there was entire dependence on a few lines of male steriles developed in Africa for African conditions. Unless substantial basic research was done to develop other germ plasma so that too much inbreeding in the high yielding varieties can be stopped, there is the likelihood of some new disease creating havoc in the crop in large area. We have the experience before us of the maize disease in USA which arose out of the dependents on a single basic germ plasm as one of the constituents of the hybrids.

Subsistence farming being the order of the day amongst a large number of the farmers in South East Asia, they have neither the equipment nor the monetary resources to change over to modern agriculture. Programmes like Masagana-99 in the Philippines and the Small Farmers Development Agency and the Drought Prone Area Programme, both of India, aim at enabling the small and marginal farmers to take part in modern agriculture. This approach will necessarily be a long term approach before it can absorb the large numbers of subsistence farmers in the commercial agricultural process. Meanwhile, are we to take it that there is no scope for agricultural development based on simple or intermediate technology without asking for too much of additional inputs? Agricultural science has found that management practices can be introduced in every agro-climatic situation which can produce a better crop and a surer crop without much of change in the inputs. It is this basic factor which has enthused international cooperation to embark on the project ICRISAT in India for dry farming technology for better growth of certain pulses, groundnut and millets. Traditional agriculture in a region has, over the centuries, tried to adapt itself for maximising production in agro-climatic conditions prevalent with the availability of inputs in the socio-economic structure. Having developed over centuries by experimentation one would expect that traditional agriculture is the best method for maximising returns, but it is not so. Mobility in agricultural knowledge has been the least among transfers of knowledge in human development. The farmer is extremely immobile and in subsistence farming he has been tied to his land and a very narrow circle round about.

It is often our experience that an innovation made successful in a village may take decades before it is adopted in the neighbouring villages. Tradition is, therefore, very much localised. As a result, the agro-economic practices and the management practices which can give maximum safe return out of the local conditions may have been found in one area, but may not have been adopted in vast areas of the country. In the dry farm oriented rural programmes carried out in India during the last five years, it has been found that simple practices followed in one part of India, if adopted in other parts, can increase the productivity of the land. For example, under rainfall conditions of the dry areas post-harvest ploughing, thereby avoiding a basic ploughing before seed planting after the monsoon rains, enables farmers to sow larger areas and also helps in the better retention of the moisture in the land. Simple water control practices in the delta areas of India has enabled a better crop with lesser use of irrigation water. Management practices reduce costs in handling pest and disease problems by allowing integrated pest control. It is, therefore, desirable that as a first step in agricultural development, management practices are studied and the best practices for existing cropping systems are evolved and translated on the fields.

Management practices can be developed only under a multi-disciplinary approach. Except for identified projects it will often be found that it is difficult to get together a team of scientists in several disciplines to work towards a single objective. In agriculture, the single objective may be better agricultural production, but it has to be reached in many ways. What is wanted is a multi-disciplinary approach which will try to evolve practices under various different conditions in the field. This means a continuous and close association in research and dialogue amongst those working on the programme. India experimented with the coordinated research programmes starting in 1965. Such programmes have been commanded as probably the most relevant to the problem of management development. The experience of India will have to be refined and adopted wherever such multi-disciplinary approaches for management have to be introduced. Without such a multi-disciplinary approach, management which can produce

immediate results under existing conditions may not be tenable.^v

Water is the most important ingredient for plant growth. Traditionally, therefore, all over the world irrigation has developed as an important adjunct to agriculture to support the water availability from the rainfall. In South East Asia, however, because of the fairly copious monsoon rainfall and the traditional mono-crop system generally followed till recently, irrigation was used mostly as an insurance against drought conditions. On the other hand, technically an irrigation system along with the rainfall pattern in the area can be utilised to intensify the cropping on the land. Such composite management is an essential element of the agriculture based on high yielding varieties of seeds. The irrigation systems have followed the old concept and a tremendous amount of modernisation and modification is necessary before the systems can be used for the new scientific agriculture based on high yielding varieties of seeds. Not only this, the traditional irrigation systems do not have the necessary controls to deliver water to the yields when required and to shut it off when not required. As a result, in India where many old systems exist, the rice crop in the deltas under irrigation systems suffer from overflooding. This leads to another important aspect of irrigation systems. Unless the drainage system is suitably organised in the flat countries, irrigation may act as a hindrance rather than as a benefit. Over irrigation has other dangers. A continuous waterlogged condition brings up to the surface salts and alkalic in the deep subsoil and thereby spoils the land for further cropping. In the Euphrates Valley in Iraq it is well known that large areas of fertile land in the delta has become highly saline by continuous addition of salts brought up by the irrigation waters from the subsoil. In Pakistan and in India also we have the experience of areas developing saline alkaline conditions because of a continuous waterlogging. In the Chao Phya project in Thailand, we have the case of the command being a basin which during the rains is generally waterlogged. This has led to difficulties in introduction of new varieties of seeds. It is not, therefore, enough to say that a country has added to its irrigation systems. What is more relevant is the capability of the system to help in increasing agricultural yields.

India has started experimenting with command area development which includes modernisation of irrigation systems, drainage improvement, land shaping, control of water routine and adjusting the cropping programmes. There are a number of teething troubles to be got through. As the programme develops it is realised that it requires the involvement of several technological disciplines, administrative organisations, financial institutions and input supply organisations. Coordinating of these towards an effective programme of production will be one of the management problems that will need intensive study.

The bulk of the cultivation in most parts of South East Asia will have to be under rain-fed conditions for a long time to come. Though potential for irrigation is large in the zone, the requirements of capital investment for irrigation projects and the supporting investments in land shaping and infrastructure will be so large that it will take many decades for the zone to exploit its full potential. The National Commission on Agriculture of India has estimated that India will take at least another fifty years to exploit the present known potential for irrigation provided it continues to give irrigation priority in its planning. Dry farming or rain-fed farming, therefore, will have to hold the fort in large areas of these countries. It has earlier been stated that the scientists are in a position to advise on the most profitable and the safest type of agriculture for every agro-climatic zone in a country. They can certainly do so provided they have the necessary supporting data. Meteorological data is necessary in mini zones for a fairly long time period to enable scientists to statistically judge the safest periods during the rainy season, for various crucial periods of growth of a plant. Where such data does not exist, it has to be built up over a period of time before there can be any statistical analysis. Meanwhile, rough guesses on the basis of local traditions is the only answer. This is not a scientific approach. Soil analysis, soil profile and amelioration techniques are necessary for the scientist to advise on the economic optimum approach to seed and inputs. Here again, the present infrastructure available and the present knowledge available is not sufficiently detailed in the zone to enable anything but rough approximations to be attempted. Plants requirement of moisture is the

controlling factor in agriculture. An evapotranspiration analysis is fundamental to understand a plant's response. It may not always be possible to make up hundred per cent of moisture requirements during the entire period of growth of a plant. Yet, by providing hundred per cent moisture facility during certain crucial periods of growth of a plant, it is possible to get a substantial percentage of the full potential of growth of the plant. The evapotranspiration analysis has to be on a mini zone basis for the various types of plants that are growth in the area. It is also necessary to breed suitable varieties which will better adapt themselves to the local soil and moisture conditions. Thus, a very large amount of adaptive research has to be done before a scientist can, with any certainty, give advice in the sphere. Here again, the basic infrastructure has to be built up over a long period of time. Thus, though theoretically many problems of dry farming can be solved, the actual application of the theory to the field is a long-term process. Every country has to balance its availability of technical personnel needs of regional growth and the status of the basic statistics and its pace of possible development in order to introduce scientific practices into dry farming. The relative priority in dealing with dry farming areas and irrigated areas will depend on the country's appreciation of the needs of overall growth vis-a-vis the needs of social justice and area development.

Agricultural development has to be on an area basis. Cropping and water control has to be done on a watershed basis. These are basic constraints which cannot be avoided. Introduction of irrigation waters and the drainage of surplus irrigation and rainfall waters can be controlled on a field by field basis provided there is a detailed water inlet system for each field which can be controlled and a detailed drainage exists which can also be controlled without impinging on a neighbour's field. Unless all the farmers cooperate and collaborate in establishing such a water control system proper management of the crops will not be possible. For best return from the land, proper land shaping is necessary so as to help in moisture retention without creating waterlogged conditions. Land shaping can be done only on a watershed basis. Here again, the collaboration of all the farmers in the watershed is necessary.

The cropping in an area has to be such that one crop does not act as the host for pests of another crop in the area. It was the experience in India that when an area grew sorghum crops maturing one early and one late, the late crop was invariably damaged substantially by the midge which developed from the first crop. Farmers in an area will, therefore, have to agree that they will follow some ground rules in their cropping schedules. Pest control has to be on an area basis as otherwise efforts made to keep the pest off one field will only result in the pest being harboured in the neighbourhood and coming back with vigour when the pesticide effect is over. Attempts to immunise crops in a field by over-use of pesticides leads to various environmental hazards. Integrated pest control is the only answer. This requires area cooperation. Various legislative controls have been enforced in various parts of this zone to ensure area control over farmers. Legislative control only in a democratic system cannot control large masses of people who are not motivated to accept the control. Motivation can come only from all the farmers in the area realising that controlling themselves will lead to a general prosperity of all concerned. General prosperity of all concerned cannot happen unless all the farmers in an area—large, small and marginal—see a concrete rise in the productivity of their individual plots of land. Any programme, therefore, which only seeks the improvement of an individual farmer is bound to be counter-productive.

Land shaping, water inlet and drainage facilities require a capital investment. A modern agricultural programme requires investment in fertilisers. Pest control requires investment in pesticides and fungicides. Even for reasonably well-to-do farmers it is found that it is difficult for them to lay hands on the capital and ways and means resources necessary for such a programme. But, they have generally a credit worthiness which enables them to get loans at reasonable rates of interest in case they want to take part in such programmes. On the other hand, the bulk of the peasantry in this zone comprising small and marginal farmers have neither the resources nor the credit worthiness to obtain the necessary funds. A comprehensive credit system which can give long, medium and short-term loans to the farmers of an area on the basis of a creditworthy

programme of development is, therefore, a prime necessity. It is not easy to evolve such a system. In India, over the last 70 years, a comprehensive credit system through cooperatives has been established. So is the case with Pakistan. Even then, it is found that a comprehensive coverage requires a good deal of modification and regimentation of the cooperatives. This appears to be a contradiction in terms because cooperatives are considered to be autonomous and not subject to regimentation. The difficulties are obvious. In the Philippines, a rural bank system was started and proved effective up to a stage. It was found that this system also did not give the coverage that was required. In Masagana-99 Programme, the Philippines are experimenting with a direct credit line from the government to supplement the rural banks. Whether it is the cooperative system of India and Pakistan or the system followed in the Philippines, a large amount of money has to be invested from the monetary system in long, medium and short-term funding for agriculture. Opportunity cost of money and social costs of neglect of agriculture have to be balanced. Even then, the developing countries of which the South East Asian countries are a good part, suffer from basic lack of monetary resources. It is against this background that the World Food Council recommended that the developed countries should provide substantial funding for agricultural development in the developing countries. The fund that was contemplated has to be sufficiently large to meet the needs of the countries in South East Asia in case they are in a position to opt for modern agricultural development.

Agricultural programmes in a country can be for increasing agricultural production or for a better land utilisation or for distribution of opportunities on the basis of social justice. Whatever may be the theoretical requirement of a programme, its implementation will be limited by the technological, administrative and institutional facilities available in the country. Agriculture is one field where the socio-economic situation in the rural areas can be a powerful factor in influencing for or against a required programme. Most of the main issues that can effect the implementation of programmes have been traced out in this article. There can be many side issues and nuances

depending on the socio-economic and administrative milieu in a country. These will be matters for detailed analysis and consideration in the country itself.

C H. Hanumantha Rao

National Agricultural Policy and Major Agricultural Strategies and Programmes in India

OBJECTIVES

The basic objectives as well as the processes of economic planning in India can be summed up as follows. A rapid rate of economic growth through democratic means with increasing emphasis on the welfare for the masses of people. These three objectives have become historical imperatives or inevitables for India. There is no alternative to the rapid rate of economic growth for a country faced with widespread poverty, a population explosion and rising expectations. This necessarily involves the active participation of the state, which alone can combine social perspective or vision with required resources and discipline for undertaking those economic activities which are beyond the means of private individuals as well as for directing the economy as a whole. That all this has to be achieved through democratic and peaceful means is dictated by the prevailing social structure in India characterised by the co-existence of highly stratified and non-polarized class and caste groups and interests which considerably overlap each other. The third objective, *viz*, the welfare of the masses follows inevitably from the second but needs to be spelt out explicitly. The objective in this regard as incorporated in the Indian plans is the gradual reduction in the inequalities in incomes between different groups as well as regions. But what is crucial to this process of growth is that there should be a sustained and reasonable increase in the standards of living of the poor—which cannot be postponed in a poverty ridden and awakened society.

Obviously, this model is a *via-media* between the two extremes: a very high rate of growth with comprehensive planning under a relatively monolithic and authoritarian framework on the one hand and the *laissez faire* on the other,

which is chaotic, slowmoving; and, therefore, vulnerable to violent upheavals.

INITIAL SETTING

The two major factors accounting for spontaneity in agricultural performance in the post-independence period are the growth of population and the rise of agricultural classes to political power. Population growth has meant an ever increasing agricultural labour force which contributed to a better exploitation of traditional techniques of farming. Culturable waste lands held by the government were distributed to the Harijans and other landless labourers in many parts of the country. In many areas people on their own encroached upon waste lands for cultivation. Lands hitherto left fallow and uncultivated by large land owners were brought under plough in the wake of increasing demand for agricultural commodities. Among land-holding classes, the increase of family labour led to the sub-division of holdings and to the intensive cultivation of their land through the greater use of labour for irrigation and better crop pattern, etc.

Political independence released the initiative of agricultural classes, especially the richer ones, who came to wield considerable political influence and power at the district and state levels. This meant an increasing use of state machinery and resources for agricultural betterment. This is reflected, among other things, in the significant expansion of credit facilities for agriculture in the post-independence period. The impact of these spontaneous forces extends much further. As argued later, although the influence of these forces on the basic policy-making was not significant in the initial stages of planning, their impact continued to increase and was decisive in the adoption of the new strategy of agricultural development towards the end of Third Plan.

AGRICULTURAL POLICIES : AREAS OF ACHIEVEMENT

The most significant achievements of agricultural policy in the plan period are: (i) the abolition of intermediaries, viz., jagirdari and zamindari system; (ii) the association of agricultural classes with the formulation and execution of development programmes at the local level under the scheme of democratic

decentralisation; (iii) provision of irrigation through major and medium irrigation projects and of power for minor irrigation through rural electrification; and (iv) the expansion of credit through cooperatives. The first two measures represent a major institutional reform effected in independent India and the other two constitute the core of infrastructure which are beyond the means of individual cultivators and which could be provided only through the active participation and direction of the government. It is interesting to note that a firm start in respect of all these measures was already made in the early years of the First Five Year Plan which were continued in the subsequent plans.

The policy of agrarian reform in India concerned with action on three fronts: (i) the abolition of intermediary tenures like zamindaris, jagirs and inams which covered more than 40 per cent of the area of the country; (ii) the security of tenure to tenants in ryotwari areas and the regulation of rents, and (iii) the imposition of ceiling on land holdings and the distribution of surplus lands to the landless and uneconomic holders. It is in respect of the first that success has been almost complete.

The abolition of these intermediary tenures brought more than 20 millions of tenants into direct relationship with the state. It was much more than an economic measure. Many of these zamindaris and jagirs had their own revenue administration and for all practical purposes functioned as states within the states. The cultivators were burdened with the several feudal dues and had to live under repressive and outmoded administrations. Their abolition and reform of revenue administration in these areas not only gave adequate incentives to the cultivators for progressive cultivation but released their initiative on the cultural and political plane as well. Many of these zamindars and jagirdars were allowed to resume lands for self-cultivation which no doubt led to the eviction of tenants to some extent but contributed to the active participation of erstwhile landlords in farming. Although, part of these resumed lands may have been under-utilised or left fallow, the abolition of this system brought considerable areas of cultivable wasteland under the management of the government which were distributed to the landless contributing to the increase in area under cultivation in the plan period.

Although the scheme of democratic decentralisation (panchayati raj) was extended throughout the country towards the beginning of the Third Plan, the basis for it was already laid down with the first general elections when the rising agricultural classes began to wield political power at the local level. Their influence continued to increase in the subsequent period and the Community Development administration was faced with the problems of coping with them. The scheme of democratic decentralisation ended this confusion and conflict by subordinating the CD administration to the rural leadership. The scheme no doubt brought the caste-based as well as political factions to the forefront and in general provided the means of satisfying the age-old hunger for power by the rural elite. While this sharing of power cannot be equated with their participation in development programmes, the experience of the Community Development programme made it clear that it was difficult to secure people's participation in development without entrusting them with the responsibility for formulation and administration of the programmes. The prospects of development seemed better with such an integration than with continued conflict between the CD officials and the political elite.

With the agriculturists assuming power, the transmission of technical knowledge to the farms from the urban-based experts became relatively quick and the supply lines for inputs became more elastic. The major bottlenecks now lay in the quality of knowledge transmitted and the quantities of inputs supplied, both of which depended on the overall strategy of agricultural development. A consequence of democratic decentralisation which has been amply demonstrated, though not conclusively proved, is the increasing share of benefits going to the few richer sections of cultivators. This can be rectified only through the improvement in the bargaining power of the lower classes, which can be expected in course of time with the spread of literacy and education and with increasing political awareness of the masses.

In regard to the provision of infrastructure, *e.g.*, irrigation and credit, the achievements are substantial, although they cannot be equated with success considering the requirements of Indian agriculture. Although the achievement in respect of

major and medium irrigation sources fell short of targets during the Plan period, the targets relating to minor irrigation were fully achieved. The progress in minor irrigation reflects increasing mobilisation of local resources for long-term investments. This process has been very much facilitated by the public programmes of rural electrification. The number of towns and villages electrified represented a several-fold increase since 1951. The extension of power in this period has been essentially to villages and small towns. There has thus been a recognisable improvement in the capital base of agriculture in per capita terms.

Since the area under cultivation has increased substantially during this period, the proportion of area irrigated increased from about 17 per cent at the beginning of the first plan to only about 23 per cent. Since about half of this irrigated area is represented by minor irrigation sources which are essentially dependent on monsoons, it would follow that as much as 90 per cent of the cultivated area in the country continues to be vulnerable to vagaries of monsoons.

Short and medium term credit supplied to farmers through cooperative agencies registered a rapid increase. As a result, cooperatives now account for about 33 per cent of credit supplied to farmers as against only about 3 per cent in 1951. However, bulk of the credit is still supplied by the private sources, of whom professional money-lenders' share is predominant. Moreover, a significant portion of the credit from cooperatives is appropriated by the agricultural money-lenders whose advances to the farmers have increased very much during this period. Also the position is far from satisfactory regarding the repayment of cooperative loans as well as the purposes for which these loans are used.

Thus the achievements in the last two and a half decades of planning have been substantial in the field of agricultural development. Agricultural output has been growing at about 2.5 per cent per annum, as against a decline in the foodgrains output in the 15 years preceding independence. Within a period of seven years, the output of wheat more than doubled from 12 million tons in 1964-65 to 26 million tons in 1971-72, which has rare parallels in the annals of agricultural development in the rest of the world. The area irrigated has doubled. The

consumption of fertilisers has increased severalfold. Supply of agricultural credit from the institutional sources rose to about one-third of total credit. Despite the existence of off the record tenancy, area under tenancy has declined significantly, bringing about a greater identity between the ownership and management of land. Although the acquisition of 'surplus' land through the enforcement of ceiling on the ownership may not have been significant, the proportion of land area held by the large holdings has declined.

AGRICULTURAL POLICIES AND STRATEGIES : SHORTFALLS AND WEAKNESSES

However, there are some disquieting features in the pattern of agricultural development over the recent period. Despite the technological break-through in the case of wheat, the growth rate of agricultural output as a whole has slowed down in the last decade when compared to the first decade of planning. The annual fluctuations in output have increased somewhat in the recent period. The regional disparities in development have widened. Although, there is evidence of an increase in employment and in real wages in areas experiencing technological change, land owners seem to have gained proportionately more than landless labourers; large farms gained proportionately more than the small ones.

These developments are traceable to the deficiency of public investment in irrigation, the dominance of rich farmers in the credit institutions and technological gap in the case of rice and other crops grown in the dry region. Public irrigation which has a potential for reducing regional disparities and for yielding benefits to the farmers in proportion to the area held by them, has slowed down in the last decade and half when compared to the first decade of planning. Private irrigation, on the other hand, which has a greater potential for regional as well as class-wise disparities has grown at a much faster rate in the latter period. It appears that private investment, stepped up in response to the profitability of new technology and high prices, has become increasingly important in agricultural development in the recent period.

The deficiency of public investment in agricultural infrastructure, especially in irrigation and land reclamation, is a

glaring feature of the prevailing strategy. This deficiency is indicated by the realised growth falling very much short of the targets set in regard to output and the steep rise in the relative prices of agricultural commodities.

Big farmers, who are unable to make intensive use of their available land, are interested not so much in public investment for reclaiming new land as in making intensive use of their available land through greater investment in private wells, fertilisers and farm machinery by using public resources, for example, from credit institutions. Although big farmers from the dry regions have actively worked in the past for major and medium irrigation projects, such efforts seem to have very much slowed down in the recent period. This is because, in the first place, the groups wielding power in quite a few states belong to the prosperous irrigated regions and are not immediately interested in expanding public irrigation to new areas. Secondly, even where dry regions predominate, those in power—who come mainly from the rich farmer class—seem to be reconciled to the paucity of investible resources, because expansion of resources would necessitate, among other measures, taxing of the rural rich. Thirdly, even the available resources tend to get allocated to projects which yield greater benefits for the elite, especially because new technology and rising prices provide profitable alternatives for big farmers such as investment in private wells, fertilisers, etc., by using institutional credit.

This strategy suits the urban elite as well, because they spend a small proportion of their income on food and the loss in their real income as a result of the rise in the prices of agricultural commodities could be more than compensated by the availability of non-agricultural goods and services made possible through greater priority assigned to them in relation to agriculture. The losers in the process are not urban as well as the rural poor, because they spend the bulk of their income on food. So far as investment for any particular sector such as agriculture is concerned, the problem is not so much the paucity of total investible resources as the allocation of the available resources. However, the 'paucity' of resources as well as insufficient allocation to agriculture from the available resources

are traceable, in a large measure, to the increase in non-essential consumption by the elite.

The urban elite is, nevertheless, interested in the assured supplies of marketed surpluses of foodgrains and agricultural raw material at 'reasonable' prices. It seeks to solve the problem of shortage of foodgrains arising from insufficient investment in agriculture partly through the public distribution system involving compulsory levies and administered prices — which its rural counterpart has been able to undermine to a large extent—and partly through the concentration of resources, e.g., fertilisers in the developed irrigated pockets and large farms where the results are quick, substantial and assured. This is how slow growth of agriculture and the unevenness of gains are interrelated. The two facets of this strategy, viz., deficiency of public investment in broadening agricultural base and concentration on prosperous segments, reinforce each other.

Policies on land reform, taxation, credit and prices have also been heavily biased towards big farmers who wield considerable political power at the state level and who influence the formulation as well as implementation of such policies. Unlike the zamindars and the jagirdars, these rich farmers are rooted in the villages and display considerable drive for modern farming. They would exercise considerable influence over the peasantry and constitute the social base and 'vote banks' for the ruling party as well as for many of the opposition parties. They neither have the political courage nor feel the need to openly oppose the Central leadership on several schemes of agrarian reform. They, in fact, vote for some of these radical measures but see to it that they become infructuous in implementation. Agriculture being a state subject, they have been in a position to undermine, if not reject measures which go against their interests and to mobilise state power and resources to subserve their interests.

Owing to the growth of population and to the resulting sub-division of holdings, the amount of land potentially available for redistribution after the imposition of ceilings is not significant, even if the ceilings are not evaded, and the requirements of uneconomic holdings and the landless are too great to be capable of adjustment with any reasonable level of

ceilings. The contribution of legislation on ceilings on land-holdings so far consists not so much in the 'surplus' land that is made available for redistribution as in arresting or slowing down the growth of large-scale (capitalist) farming in agriculture. A substantial contribution of the drive for ceilings is to be found in the sale of land by the big landowners and in their reluctance to acquire more land in future. In such a situation, the land market could have been tied in favour of the landless and the marginal holders by extending to them long-term, interest-free loans from the public financial institutions, *e.g.*, nationalised banks, for the purchase of land. The elite being avowedly committed to the 'free distribution' of land could not take to such a course, nor was it necessary for it to do so because land could be sold at remunerative prices to those who already owned some land.

Likewise, tenancy reforms, *e.g.*, security to tenure and the regulation of rents have been, by and large, ineffective. In the absence of effective implementation and owing to the scarcity of land in relation to demand, such legislation has contributed mainly to driving tenancy underground. Attempts to regulate rents without the effective regulation of wages have proved to be self-defeating, because, when the wages are not raised, it is more profitable for landowners to resume land for self-cultivation through hired labour instead of accepting lower rents. Also, they could resume land in many cases by resorting to tractorisation. However, regulation of rents and wages has been difficult in the absence of effective ceilings and redistribution of land. Performance has been dismal on all these counts because of the common socio-political factor, *viz.*, the dominance of big farmers. Given the structure of land-holdings, however, the practice of tenancy has contributed to efficiency in resource-use and consequently to higher output and employment, because output and employment per acre on tenanted farms is greater than on larger owner farms. At any rate, this practice has not been inequitable in every case because a good part of the land leased out belongs to the small landowners who cannot undertake self-cultivation.

Whereas the rural rich have been arguing against ceiling on land-holdings on the plea that there is no similar ceiling on urban property or income, they have not been prepared to

accept the tax burden on par with their urban counterparts. Despite the ceiling on the ownership of agricultural land, there are a large number of farmers, especially in the irrigated pockets where technological changes have made an impact, whose incomes exceed Rs. 5000 per annum. Whereas the corresponding income groups in the non-agricultural sector are required to pay Income-tax, the rural income groups pay direct taxes at present in the form of land revenue which constitutes only about 1 per cent of their farm business income.

Big farmers appropriate institutional credit more than proportionate to their share in land. Small farmers depend essentially on money-lenders including agricultural money-lenders (big farmers) who relend institutional credit to small farmers at high rates of interest and whose advances have increased very much. Contrary to the general belief, big farmers have been greater defaulters in respect of repayment of loans than small farmers. In the case of small credit societies, where big farmers wield considerable influence and power, the percentage of overdues to loans outstanding has been significantly higher among large farmers as compared to small farmers.

The real need of small farmers has been an adequate availability of institutional credit rather than lower interest rates, as the rates charged by these institutions are already much lower than those at which small farmers have to borrow from money-lenders. Yet, instead of rationing the institutional credit for ensuring equitable distribution, attention has been focused recently more on lowering lending rates for small farmers through a scheme of differential interest rates. Another issue which has been debated very much recently is that small farmers might use the money so borrowed for relending at high rates of interest. Institutional credit constitutes only a fraction of the total borrowings of small farmers and the rates of interest on borrowings from private sources exceed the 'higher' interest to be charged to the richer sections by the institutional sources, so that the poorer sections stand to gain by substituting institutional credit for credit from private sources instead of relending to the richer sections. In any case, the scheme of differential interest rates cannot be expected to succeed in the absence of credit rationing, because so long as large farmers are able to corner a substantial proportion of credit and small farmers are denied

their due share from institutional sources, it would be possible for the agricultural money-lenders (large farmers) to shift the burden of high interest rates (at which they borrow under the scheme of differential interest) to the small farmers by raising market rates of interest because the demand for such loans is relatively inelastic.

In view of the shortage of agricultural commodities and the rising prices, it was expected that agricultural price policy would be directed to ensure adequate supplies of foodgrains to the consumers at reasonable prices and to prevent unduly favourable terms of trade for prosperous agricultural regions and big farmers. However, big farmers have always succeeded in getting higher procurement prices than those recommended by the Agricultural Prices Commission and have evaded the producer levies. Whenever some compulsion became inevitable for the sake of procurement, they often opted for the zonal system—whereby surplus zones are cordoned off for purposes of procurement—as, unlike the levy on large producers, this system spreads the incidence of ‘lower’ procurement prices on all classes of farmers even when there is a levy on traders and millers. The grain so procured has been used by certain surplus states to contain consumer unrest in their own deficit pockets, even when it means greater hardships for the consumers in the deficit states, and as a bargaining counter with the Central Government and the deficit states. Despite the existence of significant interregional differences in free market prices approximating to costs of transportation and distribution from the surplus to the deficit states, the practice has been to fix uniform procurement price for wheat all over the country, which, in any case, has to cover the cost of production in the high-cost regions. Such a policy could result in added gains to the producers in the surplus states, misallocation of resources in such regions, and heavy subsidies on public distribution, the burden of which would ultimately fall on the community as a whole.

If agricultural output did in fact grow at the rate of about 4 per cent per annum—the minimum envisaged in the Five-Year Plans—employment in the production of agricultural commodities alone would have grown by about 3 per cent per annum, as the labour co-efficient, *i.e.*, percentage increase in labour input

as a result of a 1 per cent increase in output) is likely to be around 0.75 for all the techniques (*e.g.*, irrigation, multiple-cropping and HYV, etc.) taken together. This is in addition to the employment that would have been generated in marketing and distribution of additional output, in the production and distribution of additional inputs and consumption goods and in the service sector. This growth in employment would have been sufficient to absorb not only the growing labour force in agriculture, but would have also helped to clear much of the backlog of rural unemployment and underemployment. This is because, the growth of labour force in the rural sector would be significantly less than the growth of population owing, among other factors, to the migration to the urban sector and to the fact that in the initial phases of development in the low income countries, as the income increases, the participation rate of unskilled labour, particularly females, declines significantly.

A Rural Works Programme designed to strengthen the capital base of agriculture, *e.g.*, soil conservation and minor irrigation through consolidation of holdings as part of the Plan for achieving the targeted growth of agricultural output would be non-inflationary in character and would provide the basis for the sustained growth of output and employment as and when such works are completed. But the Rural Works Programme envisaged essentially as a means of providing employment because of growth of output has been slow and is likely to be slow would have an inflationary potential. Indeed, the Programme as it has been actually operating, may have been inflationary. It is difficult to conceive how adequate employment can be generated and poverty mitigated despite the slow growth of a key wage-goods sector like agriculture and when the bulk of even those small gains in output are appropriated by the richer sections.

LESSONS FROM THE PAST EXPERIENCE

Past experience shows that for a developing country like India, investment (public and private), technological change and institutional reforms should form equally important elements in the strategy for agricultural development. In the first decade of planning, the emphasis was rightly laid on institutional reforms and investment in irrigation,

For an agriculture with a high man-land ratio, rapidly growing population and a weak capital base, technological change by itself cannot lead to a satisfactory rate of growth. On the other hand, an exclusive emphasis on public investment to the neglect of new techniques results in an inefficient use of existing resources, thus depriving the economy of the productivity gains realised elsewhere in the world. Besides, inducement to higher private investment is essential in view of the limited investible resources with the government.

Institutional reforms such as the expansion of credit from cooperatives to the small farmers and land reforms including consolidation of holdings not only promote growth but ensure a more equitable share in the gains of development.

Past experience shows further that in a developing economy like India, there is no serious conflict between the measures to promote growth and to ensure equitable distribution of benefits. The largest potential for growth lies in public investments in infrastructure, which are beyond the means of individual farmers. For instance, of the total irrigation potential to be exploited, at least two-third is accounted by surface water sources which can be exploited only through public investments in major and medium irrigation projects. A good part of even the ground-water potential can be exploited only through public investment in tubewells. Drainage and soil conservation also require public action both for investment and organisation. Such an infrastructural development has a considerable potential for reducing regional disparities in growth as well as for opening up the opportunities for growth for wider sections of rural population. The real income gains to the consumers would also be substantial because of the softening impact of such investments on the prices of foodgrains.

STRATEGY FOR THE MANAGEMENT OF AVAILABLE SUPPLIES

Despite an increase in foodgrains output, the year-to-year fluctuations in output are bound to remain for sometime owing to the heavy dependence of agriculture on weather. In any particular year, when output declines significantly, the surplus marketed declines even more drastically so that the prices of agricultural commodities rise phenomenally. In a period of

shortages, a total dependence on private trade is not advisable because distribution through private trade is directed essentially towards high income pockets and upper income groups. Therefore, it is necessary to maintain public distribution system for foodgrains in order to ensure certain minimum amount of supplies to the vulnerable sections in the urban as well as in the rural areas, particularly in periods of shortages.

The objective of public distribution of essential commodities like foodgrains is two-fold: to ensure the certainty of supplies at reasonable prices. It would be difficult to meet both these objectives if all the citizens are to be supplied through the public distribution system. This would involve procurement of whole of the marketed surplus at lower prices. Since the prices of the related or competing commodities have been rising, producers may divert their resources to the alternative commodities. This would result in the shrinkage of supplies of the essential commodities in question, thus defeating the very objective of public procurement. It would be possible to prevent such a diversion of resource by offering prices to the producers which the free markets would do. But in such an event the consumers have to be charged higher prices which would, no doubt, ensure assured supplies through the public distribution system, but would come into conflict with the second objective of providing at reasonable prices.

The basic question, however, is whether it would be justifiable to undertake to provide for all sections in a society like ours which is characterised by extreme inequalities in the distribution of income. In a socialist country where the distribution of income is relatively equal, it is the duty of the government to treat all the citizens equally. In a system like ours, on the other hand, public distribution can be made an instrument for effecting redistribution of income by supplying essential commodities only to the poorer sections at lower prices and leaving the rest to pay the market prices. In fact, the rising prices are very much the result of the high purchasing power of the better off sections. Such a partial distribution has the additional merit of ensuring production incentives. Since only a part of the marketable surplus is procured at lower prices for the public distribution system (a good part of it being procured through levy from the rich farmers who have greater marketable

surplus), farmers are free to sell rest of the produce at the market price set by the high purchasing power of the well-to-do sections. This would prevent the diversion of resources away from the production of essential commodities under consideration. Thus, the system of partial distribution has merit of redistributing income from the rich farmers and the rich consumers, on the one hand, to small farmers and the poorer consumers, on the other.

It is wrong to believe that the public distribution system by itself will be able to solve the problem. The present crisis is the result of a long-term imbalance between the supply and demand for foodgrains. The basic solution, therefore, would be to step up public investment in irrigation in the backward regions and strengthen the economy of the small farmers through greater emphasis on land reforms and through more equitable distribution of credit and inputs. In the absence of such long-term measures, the country, may be caught in the vicious circle of short-term solutions which may become increasingly difficult because of the emerging shortages.

Agrarian Social Structures and Agrarian Reconstruction Patterns in Asia

The study of the agrarian social structure and of emerging patterns of agrarian reconstruction in Asia is important both from the scientific and operational standpoints. Many of the Asian countries have predominantly agrarian societies and one of the foremost objectives of the governments in these countries is to bring about a transformation of these societies through sponsored programmes of economic and social development.

An important precondition for the success of these programmes (as highlighted repeatedly by actual experience of developmental planning) is that the assumptions regarding the structure of the agrarian society underlying general or specific plans of development should correspond in basic respects to the facts of real life. In other words, the bigger the gap between the assumed and the actual agrarian reality, the greater will also be the gap between expectations and the actual outcome.

Of late there has been a growing recognition of the phenomena of 'refraction' occurring as a consequence of the wide gulf between the *a priori* 'book view' of the agrarian social structure, and the 'field view' derived from close and direct observation of real life. That this gulf has been at least one of the factors vitiating the effectiveness of developmental planning is also recognised more and more in many Asian countries. One of the important contributions which the social scientists can make in this sphere is to provide a more authentic and comprehensive view of the agrarian social structure as the foundation of more realistic and effective rural planning.

An important problem for social science is, therefore, to formulate a typology of the agrarian social structures in Asian countries on the basis of the insights and information provided by micro village studies from several countries in the Asian

region. This typology should aim at providing a closer approximation to reality as compared to the models based purely on *a priori* logic, national folklore or historical parallels and analogies.

In this paper an attempt has been made to indicate a broad typology of emerging agrarian patterns in Asian and to suggest some hypotheses regarding the implications of each of these types for economic and social development in Asian countries including India. In the second part of the paper an attempt has been made to review and evaluate the current thinking of social scientists on the relative merits of each type of agrarian structure in the terms of achieving the twin objectives of economic growth and social equity.

I

In the past attempts have been made to interpret the agrarian social structure of Asian countries in terms of the 'class' model of feudalism (or the Asian variant of feudalism, sometimes called 'semi-feudalism'). In the same strain attempts have also been made to interpret the contemporary agrarian change in these countries in terms of the conceptual framework of the transition from feudalism to capitalism.

The indigenous alternative to the class model (a model derived primarily from the western context) has been the model of the 'village community' which is said to typify the contrast between the Western and the Asian agrarian social structures.

The starting point of any analytical study is a critical appraisal of both these models in the light of facts of real life from the Asian region, and to contribute a more appropriate typology suited to Asian conditions.

It may be tentatively suggested that the *differentia specifica* between the Asian and the Western agrarian structures is the relative predominance of the self-employed peasant households in the Asian agrarian economy and society. These peasants are often full or partial proprietors of lands which they cultivate, but most often they cultivate lands as tenants of the landlords who are the actual proprietors of these lands.

Thus the social framework of Asian agriculture seems to conform to the basic type of structure characterised by the

predominance of self-employed peasant households. And this fact provides the reason for the irrelevance or the partial relevance of the conceptual models of feudalism or capitalism to Asia.

At the same time the existence of various types of economic and social cleavages among the peasant households themselves provides the reason for the inapplicability also of the model of 'village community' for an adequate comprehension of the Asian agrarian situation.

Within this broad social framework of Asian agriculture three sub-types can be broadly identified. The two broad principles for the characterisation of types in a dynamic and developmental context are : what is the relationship between the actual tiller and the landlord and who is performing the entrepreneurial role and function ?

Based on these two criteria, the three broad sub-types have been formulated. The type I is where the tiller occupies the position of the tenant or a wage-labourer and the landlord is an active person performing the managerial and entrepreneurial function.

The type II is where the peasant tiller occupies the position of the self-employed tenant cultivator; the landlord is either an absentee person or, even when he is resident, he is disinclined by past tradition or his way of life to perform the entrepreneurial role. In the type II situation, neither the landlord nor the tenant is performing the entrepreneurial function.

The type III is where the self-employed peasant is himself the proprietor of land and the functions of cultivation and entrepreneurship are not separated but are performed by the same person.

It must be remembered that under all these types of situations, there is an intermeshing of the economic and the non-economic, and the roles and functions performed by various types of landlords and peasants are determined not only by their respective economic positions but are part of a wider network of social relationships and of belief and value systems.

It should be remembered that it may not be possible to allocate a given country as a whole to any of these types. All these sub-types may be present in varying degrees in each country. But the basic characterisation of each country should be derived not from how many types are present in a country

at a point of time but from: (a) which type is dominant at a point of time, and (b) which type is likely to grow in importance in course of time.

The next step is to analyse the implications of each of these pure types of agrarian structures for economic and social development. Since the problem of agricultural transformation has overriding priority in most Asian countries, the first step is to assess whether this typology can provide any clue to agricultural backwardness or development in different Asian countries or in different regions within the same country.

Social science literature generally provides explanations of agricultural backwardness in terms either of purely techno-economic factors (like the static state of technology and the consequent lack of opportunity for gain), or of purely non-economic factors (like characteristics of the agrarian structure and of attitudes, values, etc., prevalent in a particular socio-cultural situation).

The non-economic explanations are sometimes purely 'structural' explanations as distinct from 'value' explanations, and sometimes the 'value' and 'structural' factors are integrated in a single explanatory framework.

Purely techno-economic explanations are mostly biased in favour of treating techno-economic factors as independent and determining factors and the 'non-economic' factors as dependent variables. The underlying view is that change in the techno-economic factors provides the primary impulse for change in the non-economic factors, the latter being reshaped by the former in accordance with their requirements.

Non-economic explanations tend to question this hypothesis and provide the alternative view that the nature of response to any change in techno-economic factors is not uniform in all social situations; that the kind of response (or non-response) is largely dependent on the type of structural or value situation in which the techno-economic factors are introduced. In Asian countries where educational system, administrative and power structures, and cultural and social patterns inherited from colonial rule were oppressing for the peasants, rural economic growth is not possible without some crucial non-economic preconditions.

The diversity of types of the agrarian social structures as well as the variations in the patterns and rates of agricultural transformation between different Asian countries as well as between regions within the same country provide fruitful laboratory situations as it were for the empirical verification of the above general hypotheses.

Apart from these general hypotheses, however, some specific hypotheses on the compatibility of agrarian social structures to agricultural transformation may also be formulated keeping in view the experience of other countries.

The specific hypotheses which we offer for empirical verification is that in the context of the Asian region, the agrarian structures most favourable for agricultural transformation are of Type III and Type I, the former where the peasant owner is the predominant element in the agrarian structure (as in post-land reform Japan, Taiwan and South Korea, Punjab and Haryana in India) and the latter where the landlord himself assumes wholly or partially the functions of the entrepreneur (as in Philippines, parts of India, Pakistan, etc.).

In contrast, the agrarian structure of Type II, whether neither the landlord nor the peasant functions as an entrepreneur, is least favourable for economic development. Further, as between Type III and Type I, our hypothesis is that it is the former which is relatively more favourable for economic development.

The basic reason for this difference between Type III and Type I which can be offered on an *a priori* basis is that under Type I as contrasted with Type III, the fullfledged transformation of the landlord into an entrepreneurs remains incomplete because of the deep roots of the landlords in the 'parasitic' way of life of the traditional landed gentry. The second reason is that even in the agrarian structure of Type I, the self-employed peasant cultivator remains the most numerous group in the total population.

The virtual monopolisation of the economic wherewithals of growth and levers of political power by the landlords, however, thwarts the permeation of spread-effects of development to the peasant sector of the rural economy. The Asian experience, in our view, seems to lend plausibility to the above hypotheses. The full flowering of Type III as an engine of economic growth,

however, requires a cultural, political and social development of the peasantry which, as the Japanese experience shows, is quite difficult to achieve.

Drawing from West European experience, it may be pointed out that hypotheses of the opposite kind have been offered by economists and economic historians while evaluating the role of different agrarian structures in economic development. Mogens Boserup, for instance, has suggested that the types of agrarian structure favourable for development in Western Europe in a ranked order were : (i) "the British type where the entrepreneur was the capitalist tenant and the actual cultivator was evicted and re-integrated as the labourer", (ii) "the Eastern type, where the cultivator had become a 'serf' and the entrepreneur was identical with the 'seigneur' !"

Further, according to Boserup, the French 'type' of structure where the peasant-owner predominated, was, as compared to the above two types, far less favourable for agricultural transformation; in fact, "where the peasant owner predominated in Europe, the economy at large was slow to develop". Boserup seems inclined to suggest that this incompatibility of the peasant-owner type of agrarian structure to agricultural development may hold good even for the Asian countries. As is evident, our hypothesis is just the opposite. In fact, the entire Asian developmental experience confirms the emergence of the peasant as an vehicle of economic growth and rural transformation.

II

When we shift from the plan of abstraction to that of concretisation, we can say that in terms of this typology, countries conforming to Type II (*i.e.*, to the type characterised by dominance of the unproductive landlord) and to Type III (*i.e.*, to dominance of the peasant-proprietary pattern) are not the most numerous in Asia now after almost three decades of liberation from colonial rule. (In Type III can be included, for instance, Japan, South Korea and Taiwan, particularly as they emerged after introduction of post-Second War land reforms. In Type II can be included not countries as a whole but regions within a country still under the sway of unproductive landlordism, as in parts of India in the Eastern Zone, parts of Bangladesh

and Pakistan, etc). But most of the countries belong to the intermediate type of agrarian pattern characterised by *dualism*, i.e., a mixture of Type I on the one hand and Type II or Type III on the other. The most significant feature of the agrarian history of many countries since their independence from colonial rule is the differentiation of the rural economy into a dynamic sub-system represented by the large agricultural producer at one end and the backward sub-system represented by small peasant producers and a floating mass of the landless population at the other. The dynamic sub-system is characterised by some economists as the capitalist sector. What is the nature of interaction between the two agrarian sub-system in the short-term and the long-term context? This is the basic question posed for scientific thinking and investigations. Even though very firm answers to this question are not yet available, on the basis of the results of recent investigation in different regions thinking on this question has now crystallised into three broad conceptions or points of view. These three conceptions or points of view give three different assessments of the situation arising as a result of agrarian change and offer three different kinds of solutions for combining economic growth with social equity. It should be noted that eradication of mass poverty is now becoming the widely accepted normative basis of economic and social thought in underdeveloped countries. The anti-poverty orientation is, however, connected with widely divergent perspectives of technological change and institutional reorganisation. The divergence of these perspectives is most marked on questions relating to the agrarian structure and the rural poor. The three perspectives of agrarian reconstruction mentioned below deserve to be considered as three perspectives of ensuring economic growth alongwith elimination of poverty.

(A) The spread effects from the dynamic sub-sector which is growing within agriculture are bound to permeate the backward peasant sector. Thus in conformity to the principle of percolation from the top to the bottom layers, the backward peasant sector will also acquire properties of dynamism. In this conception the capitalist and the peasant sectors are assumed to be inherently complementary to each other. A rigorous scientific statement of this conception is not available in scientific literature, even though this conception has constituted the

unstated assumption of scientific research by a section of scholars in Asia. These scholars have been concerned with an analysis of trends of growth in the agricultural economy with an implicit view that growth would also take care of the problem of equitable distribution of gains of growth. This conception, therefore, conforms to the 'harmony of interest' rather than to the 'conflict of interest' standpoint.

(B) The second type of conception recognises the existence of conflict between the two sectors. But this conception is based on two important assumptions about the nature of this conflict: (i) In the first place, it is assumed that the conflict between the two sectors is a short-term rather than a long-term phenomenon. And this conflict can be resolved either spontaneously through the forces released by development or through policy intervention. It is believed that the capitalist sector would provide the means for injecting dynamism even into the peasant sector. (ii) Secondly, it is also assumed that there is nothing alarming about such a conflict in as much as it is a necessary and inevitable concomitant of the dynamics of economic growth. Growth with inequality and tensions is to be preferred to stagnation with stability (Bauer and Yamey, 1957).

(C) Unlike A and B, the third conception is based on the following assumptions: (i) That the relationship between the emerging capitalist sector and the traditional peasant sector is inherently antagonistic—being a relationship between two unequal sectors, one strong and the other weak. (ii) That the dynamics of growth is bound to result in the accumulation of the fruits of growth in the emerging capitalist sector and in the impoverishment, if not the disintegration, of the peasant sector. (iii) That this economic tendency poses a serious threat to the peasant sector and consequently leads to political tensions and instability.

In India and many other Asian countries when the new agricultural strategy was first introduced, conception A seemed to be the implicit, if not the explicit, basis of scientific research and policy-making. Subsequently, however, the widest consensus seems to prevail around conception B. Conception C can be said to constitute a minority trend among social scientists and policy-makers.

It may be noted that in scientific-economic literature, one does not come across any clear-cut formulation of conception. Although one does come across this conception in the political literature and memoranda of farmer associations dominated by landlord and rich farmer interests.

Some variants of conception A is, however, available in economic, historical interpretations of developmental experience as in the paper by Mogeus Boserup (1963) relating to European experience and in the paper by R.P. Dore (1965) relating to experience of pre-Land Reform Japan and its relevance to contemporary Asia. Boserup observes in unmistakable terms that not the small-holding peasant but the large-sized tenant cultivator or the enterprising feudal lord was the engine of economic growth in Western Europe and the attempt by Asian countries to rely on the peasant for economic growth and thus simultaneously to promote social welfare is not likely to succeed. Boserup says that "the chief difficulty in changing the agrarian structure in South Asia is that the aim of protecting the economically weak tends to come in conflict with the aim of rationalising the productive structure of agriculture". Similarly, generalising from Japanese experience, R.P. Dore makes a distinction between Stage I land reforms which converts a feudal type of landlord into a commercial type and Stage II land reforms which removes the commercial type of landlord from the agrarian scene and puts the emancipated peasant in its place. Dore suggests that it was good for Japan's economic growth that a direct transition was not made in Japan from feudal landlordism to peasant proprietorship. In other words, a historical phase dominated by dynamic landlords was propitious for Japan's economic development. Dore does not say that all underdeveloped countries today must necessarily pass through a Stage I land reform before entering the phase of Stage II land reform. But such a lesson may be drawn from Dore's analysis by those who feel that peasants in most countries of Asia are still backward and not capable of taking charge of the process of agricultural modernisation. A phase of dynamic landlord or rich peasant dominance may be recommended by many as a phase of apprenticeship of peasant in agricultural modernisation.

Having discussed variants of conception A we now discuss

variants of conception B. Conception B has been presented with considerable force and lucidity by John W. Mellor (1968) in the following passage: "One of the certainties of a dynamic economy is that relative incomes of various groups in a population will change. Thus the development process, while providing the long-term basis for amelioration of poverty and economic inequality, may in the short run exacerbate it. The dynamics of technological change in the agricultural sector will provide sharp increases in incomes of the peasant farming class in those geographical areas where soil and water resources are favourable to the new technologies. However, the new technologies will, in many areas, provide no basis for improvement at all. Thus inter-regional disparities in income may well be widened. Quite possibly of considerably more importance, the new technologies may provide their benefits to the peasant farming class roughly in proportion to land holdings rather than in proportion to labour inputs. Already substantial income disparities will thus be widened between the landed peasantry or landlord classes, and the huge, landless labour class. It is likely that income inequities are more tolerable in a static framework than in a dynamic one of widening disparities."

What are the social and political implications of these widening income inequities as between regions and also as between classes? Mellor further observes on the basis of Indian experience:

"...We find tremendous regional differences in India not only in initial division between landowning and labouring classes, but also in the effects of the dynamics of expanding non-farm employment. Widening income gaps and a potentially explosive political situation will be most marked where the relative size of the existing landless labour or sub-tenant class is greater; where the income-increasing effect of technological change is greater and the effect of that technology in increasing the demand for labour is less; and where the history and opportunity of non-farm jobs is less. Where these conditions appear, it will on the one hand be exceedingly important to take what steps can be taken to mitigate their effects and on the other hand there will be a severe test of the Indian political process as it attempts to relax the resultant tensions.

"As great as these tensions can be in some areas, they are unlikely to topple the political structure by themselves. First, the areas of greatest tension tend to be scattered, increasing the difficulty of putting together a cohesive political force. Second, there is a cohesiveness in the Indian rural social structure which will tend to bring to notice and dispel tensions as they arise."

There appear to be a major gaps in Mellor's assessment of the agrarian situation. In the first place, Mellor takes note of only the growing conflict between the landed and the landless classes. Even here he does not distinguish between two types of conflicts, viz., (i) those between landlords and tenants, and (ii) these between employers and employees. Further, Mellor overlooks the numerically largest section of rural society consisting of small producers. They constitute the most vulnerable section which is exposed to great distress and uncertainty with the development of competitive and dynamic agriculture. Thirdly, Mellor's views regarding the social and political consequences of economic conflict lean towards facile optimism, though the logical or empirical basis of this optimism has not been adequately presented.

In his Presidential Address to the Fifty-third Conference of the Indian Economics Association (December 1970) Dantwala has presented a much more subtle and sophisticated interpretation of conception B. Dantwala's analysis seems to imply that: (i) 'dualism' in the sense of a rigid and stable division between the privileged and the disadvantaged would be more characteristic of static rather than dynamic agriculture; and that (ii) the new forces of technological change instead of contributing to the emergence of 'dualism' have in fact made a great contribution towards the 'softening of dualism'. Dantwala would not perhaps deny that this contribution so far exists more in the realm of potentiality than in that of actual accomplishment. But his optimistic view seems to be based on three premises:

1. The new technology is not dependent on large size; it has in fact "reduced to threshold of non-viability to something like three irrigated acres". Having raised the profit-potential of Indian agriculture in general and of small peasant agriculture in particular, new technology has emerged as a force against rather than in favour of 'dualism'.

2. Questions of equitable distribution in favour of the small peasants through institutional reforms, etc., have assumed a much greater urgency and significance now in a dynamic context than they ever did in a static economic context. Social and political processes against dualism are also likely to gather more strength in a dynamic than in a static economic situation.

3. Lastly, experience has shown that institutional reforms without technological progress are neither feasible nor capable of leading to any appreciable and sustained improvement in the conditions of the "vulnerable class of socially and economically disadvantaged persons". Technological progress in agriculture creates the possibility of achieving growth with justice to this vulnerable class. This possibility can be converted into a reality in two ways. Firstly, economic and institutional reforms of a 'preventive' type can be initiated with a view to protecting the interests of the poor. Secondly, from the earlier pre-occupation with measures to cope with food shortages, attention can now be shifted towards planning for the development of the non-agricultural sector of the rural economy. The latter must be given high priority with a view to providing non-farm economic opportunities for marginal groups within agriculture.

Dantwala's address presents one of the most perceptive interpretations of the interaction of institutional and technological factors in Asian agriculture. It offers policy prescriptions also in clear and sharp manner.

One of the major weaknesses of Dantwala's analysis, however, is that, so far as the equity aspects of growth are concerned, it concentrates more on potentialities than on actualities. Even if one concedes that institutional reforms without technological change would not contribute very much to the uplift of the peasant masses, it is also to be considered that technological progress without institutional reforms has in reality led to a situation in which "the gains of technology have been monopolised by the privileged and the powerful". In the immediate context, therefore, the impact of new technology has been to accentuate the cleavage between the privileged and the disadvantaged classes. Secondly, even if one concedes that the new technology creates the possibility of effecting improve-

ment also of the peasant masses, for this possibility to be turned into a reality the resource availability would have to undergo a tremendous improvement in favour of the weak and the disadvantaged. For such a change in the resource situation in favour of the poor what is the most crucial is a drastic change in the power balance in their favour. One of the crucial gaps in Dantwala's analysis is that the political assumptions and premises underlying his view have not been spelled out and the role of the power balance in determining the allocation of resources to different classes and also the distribution of gains from new technology has neither been explicitly recognised nor given due weight.

Another variant of conception B has been presented forcefully by V.M. Dandekar and Nilakantha Rath in their well-known work 'Poverty in India' (1971), which has relevance also for many Asian countries. The main thesis of Dandekar and Rath is lucidly and candidly stated by them in the following passage:

"The new technological advances have made owner-cultivation in sizable farms a distinctly profitable proposition. Such farms may be regulated by registering them as farm businesses and bringing them under suitable labour and taxation laws. But subject to such regulation and within the limits of accepted ceilings they must be allowed to grow. They will grow by absorbing small uneconomic holdings and by mechanisation of their operations. This should be recognised as legitimate and desirable because it will lead to an organisation of agriculture into not only viable but profitable units with capacity for capital accumulation and development. Undoubtedly this will increase the number of the landless, and though some of them will find more regular and better-paid employment in agriculture, on balance the employment in agriculture will decline. Certainly something will have to be done to these people who will be thrown out of the land and also out of agricultural wage employment. It is important to recognise that their number will grow rather than believe that they can all be settled on land."

Dandekar and Rath, thus, consider it futile "to try to resolve the problem of rural poverty in an overpopulated country by redistribution of land which is in short supply". In

their approach land policy has only an extremely limited role to play in solving the problem of poverty; it is to the creation of income opportunities outside agriculture that they attach the greatest importance. Dandekar and Rath have presented a well-reasoned and well-substantiated case for regulated capitalism in Indian agriculture. Some observations on this contribution may not be out of place here. In the first place, even though it presents data and analysis for different states, the regional patterns of agricultural development do not fully emerge in this work. To put it differently, even though the direction in all states may be towards growth of capitalism, the stage of capitalist development and its features may vary from region to region. As a result, the scope as well as limitations of land policy in the anti-poverty programme may also vary from region to region. In fact, an all-country perspective should be attempted, along with a regional analysis in depth rather than without it. The second weakness of this work lies in its inadequate exploration of the social and political aspects of the process of agricultural transformation. At a high level of abstraction from reality it may be easy for an economist to characterise the growth of capitalism, along with squeezing out of the small producer which goes with capitalism, as a 'socially desirable' development. But what are the economic, political and social concomitants and consequences of such a development in real life? Is there no alternative to capitalism in the Indian context? All these are relevant questions which are being raised by Asian Social Scientists in the light of recent experience of agrarian transformation in Asian countries.

A survey on South East Asia's Economy by the Asian Development Bank (1970) is full of concern for the adverse impact which technological change may have and is having on the small peasant economy. To quote one observation from this report:

"These are the possible disequalising effects of the green revolution on the bigger and smaller farmers within the country. These disequalising effects may arise, not because of the economics of large scale production but because the green revolution increases the amount of modern inputs which the farmers have to buy and thus sharply raise the cash outlay required for efficient farming. Many people fear that this will lead to the

larger and more commercialised farmers buying out small proprietors and evicting small tenants and thus increasing social and political tensions. They ask whether the South East Asian countries should not adopt policies to control the growth of the large farmers and try to carry out the Green Revolution based on small farmers as in Japan and Taiwan."

The Survey explores various ways of resolving this conflict between the large and the small producers and recommend various policy prescriptions.

A diagnosis on similar lines is also provided by Shigeru/Ishikawa on the basis of his case studies of the Philippines and Thailand. Ishikawa has noted the emergence of a dynamic force in the rural economy of Philippines in the form of the large producer but he has also pointed to the fact as this "dynamic force gradually expands and finally dominates all over the country, a viable agricultural economy will certainly be created," but "the poor sector of peasants may possibly get poorer." He has, therefore, posed the pertinent question: "Whether there is any possibility of reconciling the measures for promoting the dynamic force of the emerging commercial farmers and those for realising the production energy of the lower strata farmers, or how can profitability and collective welfare be utilised simultaneously and consistently?"

His tentative proposal is "to create an agrarian system in which both profitability and collective welfare work as complementary motivating forces for agricultural progress and both the modern and traditional inputs are used effectively and in a scientific manner."

The social implications of a large-farmer based agricultural transformation have been explored by non-economists whose contribution to the debate on agrarian reconstruction deserves mention. Guy Hunter in his book *Modernising Peasant Societies* (1969) takes note of the emergence of a dynamic sector in agriculture in many developing countries including India, but he does not share the optimism of Dantwala or Dandekar. He asks pointedly: "Is the rich and enterprising farmer a development hero or a social menace?"

Hunter shows how the growth of the dynamic sector destroys the economic security which the vast majority of the poor enjoyed in the traditional economy. In the face of technical

change the vast majority of small landholders are "much more likely to be driven off their land or to sell it to pay debt".

Hunter warns that this vast majority is "probably strong enough, even to-day, to rise up and crush beneath its enormous weight a progress which leaves out too many tens of millions of Indian people".

Hunter's analysis focusses attention on the importance of 'security' in the scheme of life of the peasants and the social and political consequences of the disintegration of this security system unaccompanied by the new mechanisms of security.

One can even recall in this context the Western experience as summed up by Schumpeter (1954) :

"In principle, mediaeval society provided a berth for everyone whom it recognised as a member; its structural design excluded unemployment and destitution... This changed in and after the fifteenth century.

"...The agrarian revolution not only destroyed environments that might have sheltered fugitives from distressed areas but also caused the landless to increase much more rapidly than the effective demand for labour."

One of the major weaknesses of Hunter's analysis, however, is that it raises the question of security for the majority of the rural population in isolation from the question of economic growth.

We now refer to those contributions which can be said to approximate to conception C. It may be repeated again that the main weakness of the critics of the large producer-based strategy of agricultural transformation is that they raise important issues mainly from the standpoint of equality in isolation from the question of economic growth. In other words, there have not been significant attempts in India and other countries both on a theoretical and empirical plane to work out an alternative strategy of equity-oriented economic growth.

In his two recent papers on "Ownership and Distribution of Land" and "Some Questions Concerning Growth, Transformation and Planning of Agriculture in the Developing Countries" K. N. Raj (1970) has attempted to provide an alternative perspective on the question of agricultural transformation. Raj's argument is that in countries like India with a relatively abundant supply of labour and in the absence of economies of

scale, the optimum size of the farming units may be small. But considering the actual size of operating units, one finds that the bulk of the area is concentrated in units not of small but of large size. In fact, "the size distribution of operational holdings is often not markedly different from that of ownership holdings". Further, the distribution of credit also tends to be concentrated in large holdings. As a result the gains of new technology also tend to be concentrated in these large holdings. Raj's analysis implies that the gap between the rates of growth in the large farms sector, on the one hand, and the small farms sector, on the other, would become much wider in a dynamic context of technological change than in a static context.

Raj, however, is not one of the those economists who regard this as a "socially desirable process" deserving to be encouraged and strengthened. And here his analysis makes a sharp departure from the standpoints of other economists. Raj's argument brings out the conflict between private profit maximisation, on the one hand, and social return maximisation, on the other, under conditions of large farmer dominance. The large producer tends to economise labour by adopting labour-saving techniques and to "utilise available land and other inputs only to the extent consistent with these techniques". The small producers "have an advantage insofar as the new technology requires intensive application of labour...but little credit since the risks attached to the new technology also set limits to the application of other inputs". Under the given pattern of distribution of ownership and operational holdings, there is an inefficient utilisation of economic resources considered from the standpoint of society as a whole. In other words, Raj's analysis implies that the transfer of land and other resources from the large to the small farmer would contribute not only to equity but also to more efficient utilisation of economic resources from the social point of view.

It is pertinent to recall in this connexion C.H. Hanumantha Rao's study on *Agricultural Production Functions, Costs and Returns in India* (1965). Rao's study also suggests that "with labour-intensive technique, productivity of land and output can be raised best under a more even distribution of the ownership of land which would make for a greater identity between these three factors (i.e., ownership, management and work)". In his

more recent work on *Technological Change and the Distribution of Gains in Indian Agriculture* (1971), Rao has taken his analysis further and worked out an alternative strategy of growth based on land-augmenting and labour-intensive technology.

This question of efficiency of small peasant forms needs to be explored further not only from the point of view of output-maximisation but also from the point of view of surplus-generation for economic development.

We may draw attention to two important contributions in the recent period which have an important bearing on conception C. Amit Bhaduri (1973) in his recent paper on "Agricultural Backwardness under Semi-Feudalism" has drawn attention to the in-built structural obstacles to technological change in a small peasant agricultural economy. He has derived empirical support for his thesis from his field visits to selected West Bengal villages. Amit Bhaduri's model of semi-feudalism, however, would apply only to those village economies where the credit structure and the land system are insufficiently differentiated and where the monopolist of land, the landlord, is also the monopolist of credit, the money lender. The enormous requirement for consumption loans in a perennially deficit peasant economy pushes up the rates of interest to such a high level that the landlord finds it far more lucrative to invest his resources in money-lending than in improvement of agriculture. This model of feudalism would not be valid if the peasant has access to independent sources of credit, as in Punjab, or where the cooperative credit comes to the aid of the peasant and reduces his dependance on the landlord-usurer or where the technological improvement promises a much higher return on resources invested in agricultural development than in usury. In other words, Amit Bhaduri's paper corrects the facile view which expects agricultural break through from just transfer of land from landlords to tenants. The narrow concept of structural change implicit in conception C is thus widened so as to include not only land reforms but also credit restructuring, technological innovations, and changes in the power balance.

Attention needs also to be drawn to the J.N. Sinha's paper on "Land Reform : A Dissenting View" (1973) which offers a critique of conception C. In Sinha's view transformation of subsistence into commercial farming is a necessary part of

economic development. The break-up of large holdings and the creation of peasant agriculture would contribute to economic development if it transforms subsistence oriented peasant into a commercial farmer. For this transformation mere break-up of large holdings is not enough : what is required is creation of an infrastructure for growth and a high level of cultural development of the peasantry. In the absence of the latter, land reforms may retard rather than promote growth.

A comprehensive view of the economic, technological, cultural and political pre-conditions necessary for making 'land to the tiller' (or peasant agriculture) successful as a framework of economic growth has been presented in *Agricultural Policy and Developing Countries* (1974) (and specially in the perceptive introduction by the editor of the volume, Nurul Islam and in V.K.R.V. Rao's "Growth with Justice in Asian Agriculture" (1974). A sharp assessment of how Green Revolution has promoted economic, social and political polarisation and a call for an alternative perspective of transformation of Asian agriculture is also presented by Griffin (1975).

CONCLUSION

Implicit in the three economic perspectives reviewed in the foregoing pages are three divergent perspectives of agrarian change and also three operational strategies conforming to three agrarian perspectives. Further, conforming to each of these perspectives and strategies is also a specific conception of balance of political and social forces or class combinations representing a specific power balance. It should be noted, however that the power balance favourable to conception C has not yet emerged in many countries of Asia. The dominant power balance is essentially favourable to conception B and even in respect to conception B the balance is more favourable to articulation of programmes than to their effective implementation.

REFERENCES

1. P.T. Bauer, and B.S. Yamey, *The Economics of Underdeveloped Countries*, Cambridge University Press, London, 1957.
2. M.L. Dantwala, "From Stagnation to Growth: Relative Roles of Technology, Economic Policy and Agrarian Institutions", *Presidential Address*, Indian Economic Association, Fifty-Third Conference, Gauhati, December, 1970.
3. V.M. Dandekar, and Nilakantha Rath, *Poverty in India*, Gokhale Institute of Politics and Economics, Bombay, 1971, p. 88.
4. Guy Hunter, *Modernising Peasant Societies: A Comparative Study in Asia and Africa*, Oxford University Press, London, 1969, p. 18.
5. Joseph A. Schumpeter, *History of Economic Analysis*, Oxford University Press, 1954.
6. K.N. Raj, *Ownership and Distribution of Land*, Centre for Advanced Studies, Delhi School of Economics, 1970.
7. "K.N. Raj "Some Questions Concerning Growth, Transformation and Planning of Agriculture in Developing Countries", *Journal of Development Planning*, No. 1, 1969.
8. C.H. Hanumantha Rao, *Agricultural Production Functions, Costs and Returns in India*, Asia Publishing House, Delhi, 1965.
9. Amit Bhaduri, "Study in Agricultural Backwardness under Semi-Feudalism", *Economic Journal*, Vol. 83, No. 329, March, 1973
10. J.N. Sinha, "Land Reform: A Dissentive View", *International Labour Review*, Vol. 108, No. 5, Nov. 1973.
11. Mogens Boserup, "Agrarian Structure and Take-off", in W.W. Rostow (Ed.), *The Economics of Take-off into Sustained Growth*, New York, 1963.
12. R.P. Dore, "Land Reform in Japan's Economic Development—A Reactionary Thesis", *Developing Economics*, Special Issue, Vol. 3, No. 4, 1965, pp. 487-96.
13. C.H. Hanumantha Rao, *Technological Change and Distribution of Gains in Indian Agriculture*, Macmillan, 1975.
14. Nurul Islam, *Agricultural Policy in Developing Countries*, Macmillan, 1974.
15. Asian Development Bank, *Southeast Asia's Economy in the 1970s*, London, 1971.
16. Shigeru Ishikawa, *Agricultural Development Strategies in Asia*, Asian Development Bank, 1971.
17. Keith Griffin, *The Political Economy of Agrarian Change: An Essay in the Green Revolution*, Macmillan, London, 1974.
18. V.K.R.V. Rao, *Growth with Justice in Asian Agriculture*, Geneva, 1974.
19. P.C. Joshi, *Land Reforms in India, Trends and Perspectives*, Allied. 1975.

Resource Endowment Utilisation : A Plea for the Integrated Management of Land and Water Resources

The relevance of good land and water management to the economic growth of a predominantly agricultural country like ours is self-evident. For, in the ultimate analysis, it is these resources which sustain all forms of agricultural, animal and forestry production and determine the level at which we can maintain our growing population. The frequency with which floods and droughts visit the land and the persistent poverty of our people are a constant reminder that our present management of these basic resources is far from satisfactory.

The most important elements of a strategy for land and water management may be summarised as follows*:

- (i) Erosion, whether by wind and water, is the biggest enemy of the land and must be controlled as a matter of the highest priority. The loss of the top soil—an inch of which it takes Nature anything from 500 to 1000 years to build and which is, therefore, an irreplaceable resource—not only renders the land infertile and increasingly vulnerable to further erosion but also has many other deleterious effects. While wind erosion contributes to the leeward 'creep' of deserts, erosion by water silts up tanks and reservoirs, raises the beds of rivers—thereby causing floods—and chokes harbours and bays. Most importantly, erosion reduces ground water re-charge and is, therefore, a direct cause of droughts.

*For a detailed treatment of this subject, see B.B. Vohra, "Land and Water Management Problems in India", Cabinet Secretariat, Government of India, 1975.

The most effective way of controlling erosion, whether by wind or water, is to protect the land from further over-grazing and over-felling and to allow Nature to undertake the work of re-generation—engineering and afforestation works, which are much more costly, can be undertaken at a later stage. Experiments have shown that even the Rajasthan desert can be made, if not to bloom, to at least support a great deal of vegetation by way of trees and grasses if given adequate protection against depredation by man and beast.

- (ii) Large areas of valuable agricultural lands have been lost to water-logging and salinisation on account of man-made reasons. Such lands must be reclaimed and further damage by water-logging and salinisation must be prevented. The threat of water-logging is most acute in canal irrigated areas where inadequate or no provision at all is made for the drainage of excess irrigation water. Seepage from unlined channels and distributaries, and the obstruction to natural drainage caused by canal, road, railway and flood protection embankments also contribute to water logging.
- (iii) Unplanned urban and industrial growth has resulted in the loss of much valuable agricultural lands during recent years. This situation must be corrected by ensuring that only second or third grade lands are allowed to be used for urban and industrial purposes.
- (iv) Very large sums of money have been invested in surface irrigation projects without ensuring that the best use is made of the impounded waters. Losses by seepage alone are in many cases, as much as 40 per cent of the water released from reservoirs. Delivery schedules are uncertain and arrangements for the supply of water to individual fields and for drainage are grossly inadequate. The Command Area Development and water utilisation programmes which have been taken up recently must, therefore, be implemented with the utmost energy in order to realise the full potential of canal irrigated lands. These programmes offer the quickest way of augmenting agricultural production with the help

- of water resources which are already available, and thereby of relieving the present intolerable pressures on marginal lands, which should never have been brought under the plough.
- (v) No new surface irrigation project should be undertaken without ensuring that adequate provisions have been made for anti-erosion measures in the catchment as well as for drainage and water utilisation in the command area.
 - (vi) Ground water constitutes one of our most precious resources and must be replenished and used to the fullest possible extent. Scientific studies need to be undertaken and organisations created to help the farmer to exploit this resource without damaging aquifers by pumping beyond the level of re-charge.
 - (vii) Traditional concepts of flood protection through dykes and embankments must be revised and greater emphasis placed on the control of erosion in catchment areas.
 - (viii) Land management and water management are two sides of the same coin and must be attempted not in isolation but in an integrated manner if the costly mistakes made in the past are to be avoided.
 - (ix) It must be accepted that the natural geographical unit for land and water management is a complete watershed or drainage area and not any administrative political unit.
 - (x) Good resource management is inconceivable without resource data. Existing gaps in such data must, therefore, be filled expeditiously with the help if possible, of the sophisticated remote sensing techniques which are now available. Such gaps exist particularly in respect of soils and ground water.

How well are we placed to adopt and implement land and water management programmes in accordance with such a policy—programmes which will cost many hundreds of billions of rupees and take many decades to execute? The very first constraint which comes to mind is the lack of adequate financial resources. However, this is not a very serious matter

just at present, for the simple reason that today we are not in a position to make good use of even such limited financial resources as are available to us.

There is in fact a large element of sheer waste in the policies which we are following with regard to surface irrigation, soil conservation, forestry and flood control, which between them account for almost all our land and water management effort today. To illustrate, a great deal of the money spent on the construction of tanks, reservoirs and multipurpose projects is rendering infructuous by heavy sedimentation yields from eroding catchments, ideally speaking, should be treated even before storages are taken up for construction. Again, there can be little doubt that it would make better economic sense to invest scarce resources in programmes for saving good agricultural lands from water-logging, and for making better use of existing irrigation supplies than in the construction of new irrigation projects which will repeat the mistakes of the older ones. Afforestation and soil conservation measures taken without ensuring adequate protection against continued over-felling and over-grazing and without reference to the needs of the entire sub catchment in which they are situated are also largely a waste. Yet again, flood protection embankments are of little use unless the basic causes of floods are removed.

It is obvious that we cannot afford to perpetuate such wasteful practices and still hope to obtain the colossal sums needed to achieve even a minimum level of land and water management. On the other hand, if it can be convincingly demonstrated that money can be spent in a productive manner on properly planned and integrated land and water management schemes, all the funds required for even an ambitious programme are bound to become available sooner or later. The real problem today is, therefore, not so much the lack of money as our inability to spend it properly.

It is, therefore, the organisational constraints that we have to really bother about just now—the almost complete lack of the arrangements necessary for even formulating, let alone implementing, properly thought-out and integrated land and water management programmes. This state of affairs is due to two main reasons. Firstly, the complete absence of any

organisational arrangements whatsoever for looking after the interests of our land resources as a whole. Secondly, the inability, compounded with reluctance, of whatever organisations exist in this field to look at land and water problems in an integrated way and to perceive that they are inextricably interconnected with one another. While the inability of departments to appreciate their proper role in land and water management is based to a great extent on sheer ignorance, their reluctance to do so is born of narrow departmental considerations, particularly, the fear of losing their 'independence' and their present well-defined individual identities—however limited in scope they may be—in any bigger organisational set-up, no matter how purposeful it might promise to be.

Let us look at each of these factors a little more closely. While water is mercifully a replenishable resource—in the sense that it is gifted to us year after year in the form of rain—the top soil is for all purposes an irreplaceable asset. Yet while we have old and well established departments to deal with surface water and have created, in the very recent past, organisations to deal with ground water also, *there are still no comparable organisations, either at the Centre or in the States, which can speak on behalf of the land resource as a whole and look after its interests.* This is the reason why no voice of protest is heard on the subject of land degradation although erosion is causing an annual loss of something like Rs. 100,000 million in the form of NPK nutrients alone, of another Rs. 3,000 million by floods alone, and of unknown billions by way of damage to storage capacity in tanks and reservoirs and by way of the loss of enormous quantities of priceless sweet water to the sea. This also explains why there has been not so much as a whimper even though vast areas—estimated to be around 7 million hectares in extent and of the value of around Rs. 100,000 million—have been lost to water-logging and salinisation. Nor, in such circumstances, is there any redress for the millions of individual farmers who are insidiously impoverished by the continued loss of the fertility of their lands, even when, as in the case of water-logging, this is due not to any acts of omission or commission of their own but to thoughtless actions by various public authorities.

It is not surprising that in an environment in which we take the land for granted and are oblivious of its needs, we should have no accurate idea of our soil resources. It would indeed be unbelievable, were it not true, that the official land use statistics which are published from year to year, contain no mention whatsoever of the quality of our land resources but provide information regarding their current use only, *i.e.*, whether for agriculture, forestry or pastures, etc. These statistics also mention the areas which are classified as 'un-culturable', 'culturable waste' and 'fallow' but without any indication as to why they have gone out of production. However, even these statistics are based only on revenue records, are not the result of any scientific surveys, and sometimes hide more than they reveal. Thus, although according to these statistics about 65 million hectares of land are under forests, it is known from Forest Department sources that the area which is actually under adequate tree cover is even less than half this figure.

Let us now turn to the other administrative constraint—the inability—due to ignorance or prejudice of existing organisations to play a proper role in land and water management. Of these, the most important and well established are the Irrigation and Forest Departments. Now, Irrigation Departments have traditionally be pre-occupied only with the construction of big reservoirs and the main distribution systems, and are still quite unmindful of what happens above the dam or below the outlet. They accordingly consider the sedimentation of reservoirs, or the water logging of their command areas to be matters outside the scope of their responsibility. They also do not concern themselves with the proper on-farm utilisation of the resource they handle. Most surprisingly, however, Irrigation Departments have never taken any interest in ground water, which, as everybody knows, is at least as important a source of irrigation—at least in our country—as surface water, though far easier and cheaper to exploit and handle. It was as a result of this attitude that separate organizations for dealing with this resource had to be created recently at the Centre as well as in the States.

Irrigation Departments also suffer from the disease or gigantism, and feel at home only when dealing with big projects. In true Namboodri style they divide projects into major,

medium and minor on the basis of cost estimates. While major and medium projects are handled by the Irrigation Departments themselves, the minor projects are considered as untouchable and must be planned and executed by lesser mortals in Panchayat or Agriculture Departments.

Such then is the commitment of the well entrenched Irrigation Departments to the subject of water. What seems to be important to them is their own prestige and power and not the role they ought to play in a developing and still desperately poor society. How can one expect such departments to appreciate the need for managing water to the best advantage of the land and therefore of the community, for conserving it in the best possible way whether on or under the ground, and for preventing it from damaging the top soil whether by erosion or by waterlogging? How can one expect such departments to be enthusiastic about the complete catchment approach, which demands that water should be conserved as near to the place where it fall even though this may involve the construction of many 'minor' projects instead of one big project further down the valley? And how can one expect such departments to appreciate that if the integrated catchment approach is followed, the water they would store—whether in minor, medium or major projects—would be clean and silt free and that this process itself would ensure that rivers would run clear and sparkling all the year round and not alternate between swollen coffee-coloured torrents in the monsoons and practically dry beds in the winter?

That this picture is not over-drawn will be clear from an actual incident which was reported to me officially. Soil (and therefore also water) conservation work was taken up in a certain catchment in Rajasthan, as a result of which the run off of water—as also of course of the top soil—into a 'medium' project was seriously affected. The Irrigation Chief Engineer concerned thereupon promptly protested to the Soil Conservation Department and asked them to discontinue the work !

The orientation of Forest Departments in the matter of land and water management also leaves much to be desired. Although trees can play a great part in controlling erosion, whether by wind or water, Forest Departments have tradition-

ally never looked beyond the confines of their own boundaries and—as they might have been expected to do, had they been in good health—cast a longing eye on the vast denuded areas which are crying to be provided with vegetative cover. This is however easy to understand because, as already noticed, Forest Departments have failed to keep even so-called 'Forest Lands' under adequate cover. This in turn is due to loop-holes in the existing land as well as to the defensive attitudes they have had to adopt in the face of the growing pressures on forest lands by the impoverished inhabitants of neighbouring areas. Forest Departments are also of course the victims of the popular belief that 'forests' exist primarily to provide land as well as other sources of livelihood to the landless.

However, that may be, it cannot be denied that by and large Forest Departments have taken little interest in promoting the cause of soil conservation as such and have failed to adequately convey to the public in general and to leaders of public opinion in particular any sense of urgency regarding the deleterious effects of the growing denudation of our hillsides. They have also behaved in a superior manner towards their poor cousins in the Agricultural Soil Conservation Departments, so much so that it has always been difficult to get these two Departments to sit down together to work on plans on an entire water shed basis.

Yet it cannot be denied that Forest Departments have a tremendous role to play if we are to master our erosion problems. Accordingly to the latest land use statics, the following areas—out of a total reported area of 306 million hectares—are apparently without adequate vegetative cover :

1. Barren and unculturable land	29.3 m. hectares
2. Permanent pastures and grazing lands	13.1 -do-
3. Culturable wastes	15.9 -do-
4. Fallow lands, other than current fallows	8.7 -do-

	67.0 m. hectares

Even allowing for the fact that part of the lands at serial No. 1, may be waterlogged, rocky, or under permanent snow cover, there may well be around 50 million hectares of non-agricultural and non-forest lands which are denuded. (This is of course on the well-based assumption that "permanent pastures and grazing lands" are so only in name). However, we also know that around 35 million hectares out of the 66 million hectares classified on 'Forest Lands' are without adequate cover. There are thus round 85 million hectares of land which need to be regenerated, first by strict protection against over-grazing and overfelling and later perhaps by suitable engineering measures and afforestation and grassing. Forest Departments have, therefore, a tremendous job ahead of them, which today they are obviously not in a position to undertake because they are finding it more than they are worth to even hold on to their present positions.

We may now briefly notice the role of three other agencies concerned with land and water management activities. Minor Irrigation and Soil Conservation Organisations exist usually as wings of State Agricultural Departments and are responsible for small surface irrigation schemes and soil conservation works on agricultural lands respectively. The former organisations suffer from lack of technical supervision by the properly structured Irrigation Departments and build tanks only to see them silted up within a matter of years because no care is taken to see that soil conservation measures are initiated simultaneously in catchment areas. The latter organisations have fallen into the deep rut of only 'treating' isolated patches of agricultural lands on a part-loan, part-subsidy basis. However such 'treatment' is unscientific in character, is undertaken without reference to the subcatchment as a whole and is, therefore, very largely wasteful. The third agency is in the shape of Flood Control Organizations, which are in fact only off-shoots of Irrigation Departments and do little more than construct flood protection dykes and embankments. They thus treat only the symptoms of the disease and not the disease itself. But how smug the Irrigation Departments are in this approach of theirs is shown by the fact that even the so-called Flood Control Commissions which they have set up for the Ganges and the Brahmaputra Basins are still manned entirely by irrigation engineers,

Enough has been said to bring home the fact that we are today organizationally not in a position to take up the immense challenge posed by the need to make the best possible use of our total land and water resources. This is an alarming situation because time is definitely not on our side in the race for survival that we are engaged in. Something must be done—and done quickly—before it is too late.

What we have to do is obvious—but obvious unfortunately only to a limited number of people so far. It is only when the dangers to which we are exposed have been realised by at least the intelligentsia and leaders of public opinion, if not by public at large, that there is some hope of enough pressures being built up to force Governments to make an agonising reappraisal of past policies, to take steps to break down the resistance of existing Departments, to create new organisations wherever necessary and to set time bound targets of work in various specified fields of land and water management.

The Indian experience during the last few years shows that this task, though extremely difficult, is not quite impossible. For we can, without being unduly modest, claim that, thanks to the creation of an effective official opinion on the subject, the following gains have been definitely made in the battle for better land and water management during the last 5 years:

- (a) An integrated Ground Water Organisation—in the form of the Central Ground Water Board—was set up at the national level in 1972. Following this development, most State Governments have also set up Ground Water Organisations with varying degrees of capability.
- (b) Although the orientation and attitudes of Irrigation Departments remain basically unaltered, the need for making better use of available surface water supplies has been realised by Central as well as State Governments. As a result, integrated multi-disciplinary organisations have been set up or all in the process of being set up to undertake the planned development of the commands of as many as 50 big irrigation projects. The far-reaching significance of this development lies in the close working relationships which it will create at the field level between

Irrigation Departments, land development agencies, Revenue Departments and a host of other organisations which are involved in this area development approach.

- (c) Integrated inter-disciplinary projects have been set up or are in the process of being set up in as many as 50 drought-prone areas with the primary objective of improving land and water management on a sub-catchment basis.
- (d) At the national level the Department of Irrigation has been placed in the Ministry of Agriculture for the first time in its history. The significance of this decision lies in the fact that all activities connected with land and water management are now located within the same Ministry, and can hopefully be integrated in a sensible manner. However, since both Land and Water are State subjects, much further progress in this field cannot be expected till a similar reform takes place in the States also.
- (e) A decision has been taken in principle for the setting up of a Central Land Use Commission to look after land management problems on a national scale. In the meanwhile, however, as many as 18 States have already set up State Land Use Boards, and started studying the magnitude of the problems they face in the field of land management.
- (f) The traditional view that flood protection in a matter only for civil engineers to talk about has received a significant set-back. It is now generally recognised that flood *prevention* is better than flood *protection* and that the mere construction of embankments is not enough to save us from this annual scourge.

There are important gains but only in the sense that they have created the psychological and intellectual environment for the much more far-reaching changes which must be made in our organisational structures before we can take up land water management programmes in a meaningful way and on the scale required by the frightening dimensions of our problems. For we must aim at nothing less than bringing all relevant disciplines together in a close working relationship on a sub-catchment basis. Only then will it be possible to plan and execute at the

micro level—the only level which ultimately matters to the farmer, whether he is in a water-shed or in a command area. Only then will it be possible to ensure that each acre of land yields the best than it is capable of, whether this be in the form of trees or grasses or crops, or fresh water fish.

That day is still far off. We must not relax our efforts to bring it nearer if we are at all serious about the future of our country. We must keep on making every possible effort to create an informed public opinion on this most vital of all issues, so that such opinion might in turn create the political will necessary to bring new organisations into being and to lick—and if required, knock—existing organisations into shape.

R.N. Haldipur

Elected Bodies and Agricultural Development in India*

"The future of Indian democracy as envisaged by Mahatma Gandhi will depend upon our ability to translate the aspirations of an awakened peasantry into proper institutional norms."

V.V. GIRI

President of India

INTRODUCTION

There is a general tendency to look at agricultural development from the macro level. This is, of course, essential to provide the necessary policy direction, inter-sectoral linkages and institutions which can mobilise, and supply inputs and distribute the produce on a nation-wide scale. However, modern agriculture is not 'commodity-specific' but works within a socio-economic system which operates in a spatial framework, with socio-economic compulsions.

In a developing economy, it is necessary to provide a total view of life not merely in terms of input-output nexus but in a positive way of "moderanisation, democratisation and politicisation"¹. "Most farmers, everywhere are substantially influenced by people among whom they live ; they are affected by local traditions and values even in a highly commercial agriculture. Agriculture cannot move away from its setting in the midst of a rural culture, so programmes to change the rural culture advantageously can contribute to agricultural growth"².

*A Paper contributed to the Second International Seminar on "Change in Agriculture" organised by the University of Reading and Overseas Development Institute, London, from September 9 to 19, 1974.

¹Iqbal Narain, "Emerging Concept", in M.V. Mathur and Iqbal Narain (ed.), *Panchayati Raj, Planning and Democracy*, Asia Publishing House, Bombay, 1969, pp. 19-34.

²A.T. Mosher, "Creating a Progressive Rural Structure—To Serve a Modern Agriculture", Agricultural Development Council, Inc. New York, 1969, p. 91.

Social changes have various dimensions—the social, political, economic and technological. These cannot develop at the cost of one another. Although short-term results may be considerable in one aspect of change, the initial trust is likely to slow down its tempo subsequently and the development process could become halting. This is more so in the case of an old society on which a new nation has been superimposed.

In his book, "Modernizing Peasant Society",³ Guy Hunter describes the unique situation of 'ancient' social structure in a modern world emphasising that societies live and grow as a whole; technology and economies are dependent upon politics, administrative standards, education and even fundamental beliefs and values. Again in his book, "The Best of Both Worlds?", he has pointed out that "it is difficult to transfer to developing countries, without great modifications, the institutions of technology of the twentieth century found in the developed countries and that yet equally they are not likely to follow the earlier European stages of growth, for their outer environment is not the fifteenth or eighteenth century but the twentieth century."⁴ This has created that may be called, "an inner contradiction of the co-existence of the non-contemporaneous."

ROLE OF ELECTED BODIES

In this context, it is important to examine the crucial role of elected local organisations, particularly with reference to India where size, federal nature of its constitution, cultural and ecological diversity, different stages of development and entrepreneurial level pose problems of such complexity that any kind of uniform recipe for the entire country is impracticable. However, broadly one could discern two parallel movements in the process of change. On the one hand, there is bound to be an effort to stabilise from the national level; on the other, there is likelihood of emergence of localised forces which may try to assert themselves. In a pluralistic society, it is essential to recognise and reconcile all these diverse elements. Smothering

³Guy Hunter, *Modernizing Peasant Societies*, Oxford University Press, Institute of Race Relations, London, 1969.

⁴Guy, Hunter, *The Best of Both Worlds*, Oxford University Press, Institute of Race Relations, London, 1967.

or steam-rolling them at the local level into uniformity will not help the emergence of a national consensus.

In ancient Indian literature there is a reference to Village Councils which discussed all matters concerning village welfare and regulated the social system. "Decentralisation was a matter of necessity in days of bad transport and communications such as existed in the ancient and medieval days and not an administrative device, deliberately adopted. Nor was decentralisation in India a matter of historical evolution in a political system where local people zealously guarded their autonomy as in Britain".⁵ The British rule altered the traditional form and gave the local bodies some municipal functions. Experiments in village panchayats were launched by the Congress government in U.P., as early as in 1937.

Realising the importance of these institutions, the Indian Constitution laid down, under Article 40, as a Directive Principle of State Policy, that "The State shall take steps to organise village panchayats and to endow them with such powers and authority as may be necessary to enable them to function as units of self-Government". With the establishment of community development blocks, it was felt necessary to streamline the process of administrative decision-making. A nominated Advisory Committee was introduced in 1954 to operate at the block level. Later, Balwantrai Mehta Committee* was appointed in 1957. It had recommended a three-tier system of local government—one at the village level, the other at the Block/Taluka level, and the third one at the level of the district.

The State of Gujarat strengthened its district as well as block level bodies by giving adequate powers to the elected representatives. Maharashtra concentrated the powers primarily at the district level. Tamil Nadu, Rajasthan and Andhra Pradesh conferred powers on the middle tier and made the District Council at the top, only advisory in character. Thus a variety of experiments were conducted in the spirit of the deliberation of the Fifth meeting of the Central Council of Local Self-Government (1959), which recommended that "while the

⁵G. Ram Reddy and K. Seshadri, "*The Voter and Panchayati Raj*", National Institute of Community Development, Hyderabad, 1972, pp. 6-7.

*Report of the Study Team on Community Development and National Extension Service, Planning Commission, New Delhi.

broad pattern and the fundamentals may be uniform, there should not be any rigidity in the pattern. What is most important is the genuine transfer of power to the people. If this is ensured, form and pattern may necessarily vary according to conditions prevailing in different States.”⁶ The Panchayati Raj system, therefore, varies in terms of size, population, mode of election—in some cases it is direct, in others it is indirect—and powers and functions.

DO WE NEED THESE BODIES?

The question before us is “Do we need elected bodies at the local level?” One can argue both ways and probably the answer will be different in different countries, particularly in developing countries where there is need for creating social overheads and social reserve for laying the foundation of economic and political development. “Modernisation is essentially a process—a movement from the traditional order to certain desired types of technology and associated forms of social structure, value orientation, motivation and norms. Western technology cannot easily be grafted on the traditional social structure and cultural norms; for its successful adoption certain essential pre-conditions must be satisfied. In initial stages, a limited number of innovations can be absorbed in the different aspects of culture, but for the ‘critical take-off’ stage, a conjunction of the pre-conditions becomes necessary. According to Walt W. Rostow, “among the many others including a massive build-up of infrastructure, the building up of a new generation of men and women trained appropriately and motivated to operate a modern society is one of the most important conditions. This adds greatly to the complexity of the process and necessitates widely ramifying changes covering the entire spectrum of the traditional culture.”⁷ But in doing this, a nation must not lose its identity.

A.U.N. report on Measures of Economic Development for Under-developed Countries says, “Men learn administration by

⁶Jacob George, *Reading on Panchayati Raj*, National Institute of Community Development, Hyderabad, 1967, p. vi.

⁷S.C. Dube, *Modernization and its Adaptive Demands in Indian Society*. Published by the Training Division of the Department of Personnel and Administrative Reforms, New Delhi, as Training Abstract—24, 1973.

participating in it. They, therefore, learn fastest in countries where self-governing institutions are most widespread." It is however, true that such institutions are likely to be instrument of political power rather than essential means to attain the goals of rural development, particularly in developing countries and, therefore, some people advocate that the lower echelons of public administration could be enlivened to solve the problems of rural population under the dynamic and effective leadership of a good district officer. However, this would not in effect solve the problem because the processes of growth and development cannot be institutionalised unless there is a certain in-built device to make the apparatus responsive to the citizen by having locally elected bodies. While saying so, it is important to realise the decentralisation means a representative Government reflecting the needs and aspirations of the people. If elected people are not the true representatives of their interests, they can hardly serve any purpose. However, a beginning has to be made somewhere and some time.

Ministerial and parliamentary remoteness from the actual inter-change between administrative organs and the citizens, particularly of the rural area, could be corrected by a process of devolution of powers to the lower levels. Such a process could also serve as an upward pressure so that the higher tiers function more purposefully by concentrating on national or State-level issues rather than pre-occupying themselves with the local needs, ventilating local grievances and concerning themselves with the transfer or criticism of local officials.

THE CONCEPT OF DECENTRALISATION

Some amount of misunderstanding, however, has crept in due to lack of conceptual clarity about democratic decentralisation. To my mind, decentralisation certainly does not mean complete transfer of power to local bodies, even in matters pertaining to some aspects of local development and local administration. We cannot have, as some people have advocated, a charter of local Government whose leaders are elected by a consensus. This is neither possible within the framework of a parliamentary democracy nor feasible in a complex society such as ours where the village community is not homogenous. It suffers from structural and cultural

contradictions with different interest groups and varying needs. Many so-called elected bodies hardly represent any such diverse interests.

One of the legitimate complaints against such elected bodies is that they are captured by vested interests—the village magnates, the money lenders or the dominant caste. That is why there is a school of thought which maintains that the ends of social justice are better served at the national and the State levels. Roscoe Martin, for example, opposed complete transfer of power to local bodies on the ground that they would not be in a position to discharge a number of functions. According to him, “little Government is amateur, casual, often highly personal and even proprietary. They arouse little interest in people and are not free of politics.”⁸

In spite of this strong debunking of local bodies, it is important to realise that there is need for a local safety-valve. In a critique of Mehta Committee recommendations on decentralisation, Arch Dotson expressed the view “the Team did not tackle on a more fundamental plane the basic question why democratic vigour is lacking”.⁹ No plan, however well conceived, can be implemented without adequate political support and with the willing participation of the people. “In fact any country that tries to accomplish the entire task of creating a progressive rural structure exclusively through national agencies denies itself the use of one of its most valuable resources ; the creativity, enthusiasm and knowledge of local conditions of a large number of its own citizens.”¹⁰ This gives scope to people for effective participation in the realisation of their local goals. “The politics of adult franchise and participation, and diffusion with decentralisation of political power that it entails, would lead to both more responsive and more integrated polity.”¹¹

The basic concept behind elected local bodies is to create

⁸Roscoe C. Martin, *Grassroots*, University of Alabama Press, Alabama, 1957. Reviewed in the *Indian Journal of Public Administration*, New Delhi, Vol. VIII, No. 3, July-September, 1962, pp. 426-427.

⁹Dotson Arch, *Democratic Decentralization in Local Self-Government*, 1958, *Indian Journal of Public Administration*, New Delhi, Vol. 4, No. 1, pp. 38-50.

¹⁰A.T. Mosher, *op. cit.*

¹¹Rajni Kothari, *Politics in India*, Boston, Little Brown, 1970.

rural local agencies responsible for discharging select functions pertaining to development. It is not merely an agent of the State Government but an institution which can mobilise its own resources—both human and material—so that development can be energised and local leadership can be built up. While it can act as a check of local staff or ensure that they function effectively, it is not intended to control that staff, particularly the technical functions for which the staff is intended.

The words of Aneurin Bevin, "the whole art of local Government is to estimate the effective catchment area for dealing with particular service before deciding where boundaries of those services should be drawn" are very relevant. One must remember that decentralisation at lower levels is possible only if democracy is secure at the national level. Paul Appleby brought it out very appropriately when he said that "democratic decentralisation appears to suggest that decentralisation axiomatically enhances democracy. On the other hand, decentralised democracy correctly assumes that democracy has first been achieved through the establishment of a centralised governing institution designed to operate under popular control. It may, when it is strong enough, carry on some or all its functions through structures, which in various ways and in various degrees, are more than ordinarily decentralised when this is found to be effective, desirable and not nationally debilitating"¹² The final tests of any decentralisation are the efficiency of administration and national integration. Appleby, therefore, cautioned against too much decentralisation which is likely to create 'local egoism'.¹³

POLITICAL PROCESS IN DECISION-MAKING

Political decision-making is a major manifestation of political power and authority. It is very difficult to divorce the operation of the exercise of this power from any social, or developmental situation where choices have to be made from amongst the various alternatives claiming the attention of the

¹²Paul H. Appleby, "Some Thoughts on Decentralised Democracy," *The Indian Journal of Public Administration*, New Delhi, (Special Number), Vol. VIII, No. 4, October-December, 1962, p. 443.

¹³Paul, H. Appleby, *op. cit.*

people. Any elected body at the grassroot level is bound to go beyond its initial humanitarian service or municipal role and seek power by aligning itself with higher tiers. It is inevitable for these institutions to become ladders for the local leaders, especially the ambitious ones to climb up and be a part of a political pyramid.

On the other hand, elections are great levellers and they educate the masses. It is during this period that some kind of interaction takes place between the elite and the masses. "As long as people who vote for panchayati raj bodies are the same ones who also vote for State and Central legislatures, it is very difficult to see how the leaders at the State and Central level would stand and merely watch the happenings at the lower levels with an air of superior indifference or patronising aloofness. Not only will the State and Central level leadership evince interest but also will use all the power and influence at its command to see that its own men are elected."¹⁴

In India, the elected bodies at the local levels are creatures of State Governments, which bestow power, responsibility and resources on them through legislation. They act as agents of the State Government in carrying out some sponsored programmes at the local level, and hence wield power and patronage. Therefore, members of the State legislatures in some States have been clamouring for permission to contest these posts at the local level.¹⁵ Indirectly, therefore, the party in power establishes political linkages with those in charge of these bodies. This is inevitable unless the local bodies have so dug in their toes that they can function on their own popularity by creating an impact on the people through political work and idealism. These bodies have hardly any resources and capacity to collect taxes and, therefore, they have to look up for funds to the State Government to implement development programmes. Initially, their role may be purely consultative to make suggestions or to complain. But this is only the thin end of the wedge. The pressures are bound to mount for increasing powers. Such political alignments have not always crystallised into a firm

¹⁴G. Ram Reddy and K. Seshadri, *op. cit.*

¹⁵R.N. Haldipur and V.R.K. Paramahansa, (ed.), *Local Government Institutions in Rural India*, National Institute of Community Development, Hyderabad, 1970, p. 8.

mould and such linkage is not based on any ideological or political commitments but mainly on considerations of political support for material benefits. Political parties also try to manipulate those who get elected to these institutions; and in this process, where patronage and favouritism afflict these bodies, bureaucratisation of the non-officials is bound to take place. There may be a certain amount of interference in the location of development programmes though, however, the technical execution is usually left to the permanent officials.

A SYSTEM OF LINKAGES

The establishment of such linkages might, however, help a better perception of national goals and reconcile them with local needs. While resulting into a pipeline connexion of power and leverage which may not effectively bring about the desired change in the countryside, such linkages may result into a better appreciation of national objectives, thus securing a proper feedback for policy formulation, implementation and coordination. These linkages would operate as useful inputs of the system once the leadership at various levels is purposive. It might function as agent of political socialisation of the rural masses, afford constructive guidelines to the local leadership and those who operate as transmission belts to bring people into the national mainstream.

One of the merits of this system is the legitimisation of the political process. No group or community operates in a vacuum. Even if there are no elected bodies, there will certainly be different centres of political power representing the party in position at the State or the Centre. They are bound to impinge on the administration and the citizen in the decision-making process. We shall have such nodal points at various levels whether we like it or not. In an elected system, however, these leaders become accountable at least in the long run. Local people know their problems better and how and where a facility should be located. Bureaucracy, however, sympathetic and imaginative it may be, can never be big enough or flexible enough to evolve a meaningful plan which can meet the diverse needs of the people.

On the contrary, not only do the political leaders at the village level build up links with their counterparts at higher

levels but the officials are also likely to align themselves with the powerful vested interests at various levels, whether there are elected bodies or not; thus the advantages of development flow to the influential parties. There is a general impression that one can insulate bureaucracy and make it subserve the national goals of economic, political and social justice and bring to bear efficiency on the implementation of development programmes. In the rational bureaucratic conception, the central concern is with achieving internal efficiency through the maximum use of technical knowledge but very often we miss the point that such efficiency can not be attained without maximising the involvement and participation of people so that they can act as a point of leverage on the bureaucracy to function in consonance with the interests of the public at large. It is impracticable for the administrator to remain in a cloistered seclusion. The unpalatable fact is that there is an accretion of official power and vested interests even at the level of local bodies. The saying of Jesus Christ, "For whosoever hath, to him shall be given and he shall have more abundance but whosoever hath not from him shall be taken away even that he hath" (Mathew Chapter 13, Verse 12), which was said in a different context, seems to be true even in the socio-economic field. In one sense by creating elected bodies with a view to legitimise the political process, we may have the evil of greater exploitation. A sense of patronage can lend itself to greater strength by establishing linkages with higher tiers of the system. But on the other hand, a stage is bound to come when upward pressures and articulation of public opinion are likely to compel elected bodies to be acutely sensitive to the needs of various sections of population. Probably election malpractices have to be initially tolerated. Till the community gets political maturity the country has to go through these processes till such time as politicisation minimises the evil effects.

Therefore, until these organisations achieve maturity, the permanent officials will have a key role to play in implementing development programmes, speedily and efficiently. In the initial formative stages when democratic bodies are yet to find their feet, the role of these permanent officials is both crucial and vital but this will certainly need a new value-orientation to the officials so that they fully identify themselves with the needs

and urges of the weaker sections of the population and try to build up such local institutions which would be responsive to their diverse needs.

POLITICAL MATURITY—A PROCESS

"In the villages everything is a 'package deal'—political affiliation, personal friendships, party identifications, factional attachments, etc. Patronage, prestige-rating, caste alliances, feudalities, coercion and other malpractices, which are too well-known...to merit an elucidation, so affect the whole process of democratic election, that it is well-nigh impossible to arrive at any desideratum of people's participation."¹⁶ In spite of this, as John Dewey has remarked, "Unless local community life is restored, people cannot adequately resolve the most urgent problem—to find and identify itself. Neighbourhood face to face community is the house of democracy where alone are found vital, steady, deep human relationships". In developing countries this may take time because of illiteracy and poverty. But the very fact that they are enabled to elect their representatives is the only straw which we can hang on to. With the hope of bringing about change in the rural structure.

It takes time to have a truly representative system in villages, particularly where we have sections having not one interest but multiplicity of interests, till such time they can articulate their legitimate needs and find expression through the elected bodies.

A RATIONALE FOR LOCAL GOVERNMENT

While the capitalistic-free world and communist models have taken a concrete shape, a democratic-socialist model, particularly in a pluralistic society, is yet to emerge. "The moot point, therefore, is whether we should be satisfied with a system of informal pressure groups which very often have a hot line with the State or Central bosses, and who impinge on local administration without accountability to local population or whether we should legitimise the political process by establishing panchayati raj bodies which have to seek people's mandate from time to time."¹⁷ To some extent they provide

¹⁶G. Ram Reddy and K. Seshadri, *op. cit.*, p. 9.

¹⁷R.N. Haldipur, "On Remodelling Panchayati Raj," *Indian Journal of Public Administration*, New Delhi, Vol. XVII, No. 3, July-September 1971, pp. 527 to 538, p.4.

the much needed anchorage to the local administration since they know what they want, where it is desirable to have ; and unless there is local leadership, people's participation is not likely to be extensive.

New and progressive leadership cannot be created overnight to give a revolutionary character to the masses. Such leaders once selected shall have to have their energies canalised into developmental tasks and tempered by democratic accountability. They cannot expect the rural masses to remain for ever the same old dumb millions as more and more politicisation takes place. The participative nature of elected bodies touching the very core of the rural life and shaking the traditional foundations at their roots has not been the less responsible for this transformation. This is necessary if modernisation and acceptance of innovation whether it be in agriculture or for that matter in any other field is to take place.

Some of the empirical studies have shown that local elected bodies have accentuated the caste system and the village factions which already existed, and have now got a new dimension added on to sharpen the conflicts. Rival factions existed in the villages even before panchayati raj was introduced. But the introduction of the elected bodies has provided a new forum for their activities. On the other hand, there are many other studies to show that the elected bodies are gradually transforming the former caste factions into power factions and the new power faction frequently cut across the traditional bonds of family, caste and religion—alliances which cut across caste leadership, very often symbolising the rise of the underprivileged castes. A new realisation has dawned that inter-caste influence is necessary for electoral success and good relations with other caste of influentials is a prerequisite. It is the virtue of a democratic political system that it is able to achieve a voluntary unity in the face of diversities. The sanctity of traditional authority is disappearing and the political power structure is undergoing a change.

It is true that in the early stages, there is an increasing combination of pre-panchayati raj politics and new institutionalised politics; new factions cutting across old ones will emerge and the new leadership is likely to be more power-oriented than development-minded and that there may not be

sharpness in the attitudes of the different political parties towards these institutions at the village level. One, however, has to admit that while these institutions have partly succeeded in raising the political consciousness of the people, they have not been able to have any significant impact on the stagnant rural economy though they could be a pace setter for economic and social development. This is probably "inevitable so long as provision has not been made for a basic minimum of welfare services, including public utilities, at the local level....Politicians will tend to do what is popular and that may work against investment in projects which have a longer run and more pay off."¹⁸

On the other hand, there is hopeful evidence that "the introduction of these bodies has changed the social system of the villages and people have started participating in the development programmes and there is a change in the power structure also."¹⁹ "The villages have become more vocal about their problems, more assertive in their claims and more critical of the shortcomings in the administration and of failures in the implementation of programmes."²⁰ This is bound to release new forces and create strains and tensions in the initial stages but such tensions are necessary if one has to go through the pains of change and modernisation.

The nationwide NICD Survey (1967) revealed that villagers preferred panchayat leaders to traditional leaders; and government officials and these leaders were responsible for popularisation of improved agricultural practices.²¹

THE INDIVIDUAL AND THE SOCIETY

Gandhi, a day before his death, reiterated that economic and social independence have to be worked out in terms of the

¹⁸George Jacob, *op. cit.*,

¹⁹B. Sarveshwar Rao and K.V. Ramana, "*Panchayati Samitis, A Case Study in Andhra Pradesh in Readings on Panchayati Raj*, (ed.) George Jacob) National Institute of Community Development, Hyderabad, 1967.

²⁰B.S. Khanna, *Some Empirical Observations in the Punjab Context*, in M.V. Mathur and Iqbal Narain (ed.) *Panchayati Raj, Planning and Democracy*, Asia Publishing House, Bombay, 1969, pp. 342-51.

²¹L.K. Sen, *et. al. People's Image of Community Development and Panchayati Raj*, National Institute of Community Development, Hyderabad, 1967.

masses. He wanted a large scale democratisation of power and authority. The participation of the individual is necessary to provide support to social and economic changes and it functions as a stimulation of response of individuals to society. It is necessary because the total burden of development is very great and has to be borne by communities which have to be made strong and vigorous by developing local leadership which is perceptive and can well decide what is in their interest. Increased participation in planning will also result in removing the dichotomy between planning and implementation.

William Graham Sumner in his aphorism said, "State ways do not change folkways". How true is this? To provide effective service, we shall have to tailor the programme or the policy to suit local needs. Certainly the State Governments would be hesitant to part powers with the District Council, but in due course such Councils will have to have regulatory and planning functions so that the process of decision-making is pressed downwards to a lower level where there is competence for effective administration and micro-level planning. The middle tier will have to be given the executive functions since they are nearer to the people and can, therefore, make implementation realistic and manageable; and at the village level maintenance functions will have to be enjoined on the functionaries so that they look after whatever assets that have been created in the village. That will give the people a stake in what they are doing. In the words of Nathan Glazer, "In a complex society, people are probably the best judges of their own interest, and the role of Government must increasingly be to create an environment that permits them to seek their best interests freely".

Data Problems in Management of Agriculture

INTRODUCTION

Given the rather low productivity of traditional agriculture and the necessity to increase agricultural outputs at a rapid pace, it is argued that public intervention—meaning government involvement—in agriculture is necessary “to ensure an adequate and appropriate development of agri-support activities, both commercial and non-commercial and to activate appropriate changes in the agri-milieu.”¹ Consequently, it is argued that for such tasks, the administration has to be ‘development oriented’ and must have a ‘managerial approach’.²

In practice, the governmental intervention has often been in the form of various programmes and projects, which have clear targets, identified resource bases and spatial and temporal boundaries. The official administering these programmes could, thus, act as a manager of the specific activity. The programmes could cover activities that can include supply of inputs, procurement and processing of outputs or creating infrastructural facilities that would be conducive to bringing about a change in the orientation of the cultivator.

While governments have taken a leading role in many such programmes, it is by no means necessary that these activities be *solely* in the purview of the governments. It could be argued that the governmental intervention is a proxy for the

¹A.T. Mosher, *To Create a Modern Agriculture: Organisation and Planning*, New York, Agriculture Development Council, Inc., 1971, p. 9, quoted by V.R. Gaikwad, “Training and Research Needs for Agricultural Management”, *Indian Journal of Public Administration*, Vol. XX, No. 1, Jan-Mar 1974, p. 57.

²See Gaikwad, *op. cit.*, and V.A. Pa-Panandiker “Development Administration: An Approach”, *Indian Journal of Public Administration*, Vol. X, No. 1, Jan-Mar 1964, pp. 34-43.

commercial initiative, or as a catalyst for accelerated change. Therefore, what is valid for the government is equally so for other organisations engaged in the management of the agricultural sector, be they private, public or voluntary.

The concerns of management of agriculture are thus leading to a better utilisation of the available resources on the farm. Naturally, what happens to the produce after it leaves the farm is also significant to the on-farm decision. The term agricultural management would thus encompass the whole range of activities *off* the actual. What happens on the farm is the concern of farm management and lies beyond the scope of present discussion.

Those charged with the responsibilities of agricultural development in the developing countries, therefore, face a herculean task. Inasmuch as agriculture and related activities contribute a large share of the gross domestic product, their inability to meet their responsibilities could become critical to the success of the national effort. On the other hand, whatever is to be accomplished is on the fields of large numbers of individual cultivators, whose behaviour could at best be predicted with considerable uncertainties. Compounding these tasks are factors such as climatic variations and natural calamities, which lie beyond any control of the development strategists.

Academics and managerial specialists are often told by the managers and administrators that they have the benefit of perfect hindsight in evaluating the past performance; managers must often make do with far less information when it comes to taking up new activities. Yet those analysing such problems frequently find bulging folders containing information of all sorts. The problem of managers, therefore, is not only sufficient information, but also of *relevant* information, to be made available in time for use in their various functions. In this paper, an attempt is made to list and analyse some of these problems as they pertain to agricultural management. An attempt is also made to evolve a conceptual framework to deal with them.

Two Case Illustrations

A state government in India was planning to introduce the Intensive Agricultural Areas Programme (IAAP) in

selected districts. The objective of the programme was to increase the yields of all crops in the selected areas through an intensive and balanced use of the necessary inputs. It was contemplated to use the newly created irrigated potential to promote the high-yielding varieties (HYVs) of the main crops in the area. The areas were to be so selected as to become show-cases for further development. They were to have strong marketing facilities, assured water supply and a minimum of natural hazards.

Four months before the programme was to be launched, the Director of Agriculture called a meeting of the concerned District Agricultural Officers (DAOs) with information relating to details of irrigation, land tenure, seed farms in the district, warehousing facilities, cooperative supply and marketing societies, rainfall, incidence of famine, use of chemical fertilizers and improved seeds in the previous five years and so on. The DAOs were given two weeks' notice to collect this information.

Bench mark surveys of the districts were simultaneously launched. They were completed and published some six years later. These surveys also contained detailed break-up of the various targets. Some of the district headquarters did not possess copies of the relevant benchmark surveys.

Annually, auditors looking into the operation of the programme asked questions relating to actual achievements of higher yields and the costs incurred for specific activities. The administrators could not or did not answer these queries.

Another situation :

The Key-Village Scheme (KVS) was a programme aimed at improving the quality of farm-bred bulls through selective breeding. It was proposed to achieve the targets of the programme in about 15 years, or three cattle generations. An agricultural assistant, the lowest level functionary, was to visit at least 175 cows daily and maintain in his diary the number of cows observed in heat ; number of artificial inseminations and natural services; sicknesses; milk records; births, deaths, purchases, sales and transfers of cattle; fodder developments ; castrations and tattooings; weather conditions and agricultural operations, and so on,

These were to become the sources of an elaborate system of record-keeping, based on which periodic evaluations could be conducted. Detailed proformae were issued for this purpose.

An evaluation study conducted over twenty years after the inception of the programme observed: "Functionaries at lower levels were required to collect a mass of information through various statements and reports. Generally, the purpose and utility of the information called for was not clear to them. They collected information mechanically, without understanding its usefulness, and hence without any sense of involvement. Since little statistical analysis of the data was done at any level, they received little feedback from the higher levels which would help them in understanding the meaning and relevance of the work they did.... Financial statements were treated separately and handled independently."³

Analyses of the Cases

The two cases referred above indicate difficulties of getting and handling information at different stages of project implementation. Both represent somewhat unsatisfactory situations.

A manager concerned with planning tasks would like to have access to as much information as possible. Motivated by such considerations, the Director of Agriculture had asked for a mass of information to be collected and brought to a meeting of the DAOs. The ostensible purpose of collecting this information is to tailor the details of the programme to the realities of the area.

A priori, the utility of the information asked for could not be faulted. Given the uncertain and atomistic conditions under which agriculture is practised in most developing countries, however, the reliability of this information asked for is to be doubted. The second question that could be raised is about the timeliness of this information. In order to be useful for systematic planning; this information must be available and processed in advance. It could be questionable whether this

³V.R. Gaikwad, *A Study of the Key Village Scheme*, Ahmedabad, Indian Institute of Management, 1974, (Typescript).

information, hastily collected, could be useful for planning in the limited lead period.

This is not to question the information needs—rather to strengthen the process of collecting it. It can be argued that information on a few of the items listed could be of greater use, if properly analysed and understood.

The problems of understanding the *purpose* of data collection are brought out clearly in the case of KVS. Obviously, breed improvement is a phenomenon that could be established only by statistical means. Even assuming that all the physical activities envisaged in the programme could be successfully carried out, the proof of their having been so conducted is through progeny and milk records. If this not clearly understood by the person collecting the information, it is likely that the linkages between the seemingly unconnected pieces of information being collected are lost. So also would be the necessary precision. Added to this would be the physical difficulty in collecting the information. In an environment where the cattle owners are widely dispersed and unaware of the need to maintain even rudimentary records, collecting and analysing information for 175 cows every day would appear to be physically impossible. An elaborate edifice of analysis based on such statistics would appear highly questionable, as indeed the evaluation exercise points out.

The above illustrations point to the conclusion that in the absence of our understanding of the correct objective for data collection; very elaborate and *seemingly* scientific apparatuses could be built, which fail to deliver the results, namely, relevant information. Unreasonable demands made by higher functionaries could be an important reason for data distortions.⁴

Yet delays for the sake of accurate information cannot be tolerated. However accurate, benchmark surveys six years after the commissioning of IAAP could only be of academic interest. Even though most academics would acquiesce at the idea, a manager must make a trade-off between details and precision on the one hand and timeliness on the other.

The causes of data problems could be traced to communica-

⁴Most Indian officials bemoan the village level functionaries proclivity to 'manufacture data'. Yet they tend to add to the poor man's burden by seeking information in ever more elaborate proformaes.

tion processes in large organisations. Gaikwad has identified the following causes of the problems in an incisive paper⁵:

1. Lack of an adequate, relevant information based in communication.
2. Lack of emphasis on primary tasks in communication.
3. Lack of effective communication for coordination of activities.
4. Lack of result-orientation.
5. Information gathering without focus.
6. No learning from past experiences.
7. Aversion to making hard decisions.

These factors could be discussed and elaborated. For the purpose of this paper, it may be sufficient to accept the manifestations of these factors, as discussed above, which the manager faces. The question to address ourselves for the remainder of the paper, is how does a manager in the agricultural system plan to generate information for monitoring and control *given* these problems. In order to answer this question it might be useful to understand the information needs of managerial tasks.

Information Needs of the Manager

It is customary to identify planning, implementation and control as the three primary components of the process of managing or administering. A chronological and sequential link is suggested by this classification, *i.e.*, planning must precede implementation, which in turn must precede control. In practice, however, an administrator is often faced with all three responsibilities more or less simultaneously. This is so because he is wiser by his experience of administration in the previous periods so as to enable him to avoid possible bottlenecks (control function) and is using his cumulative experience to chart a course of action for the future (planning function). Thus, there is a degree of overlap in these functions. Nonetheless, an integrated planning and control system becomes an essential part of efficacious administration.

The key word in the above discussion is the administrator's

⁵V.R. Gaikwad, "Bureaucracy and Communication Processes for Rural Development", paper presented to a Seminar on Communication and Change, held at Poona, June 1975 (Cyclostyled).

experience of the project. As long as the task involved is simple, unidirectional and there is a continuity of personnel, experience gathered in the project manager's head and its consequent transformation into his judgements would suffice. It is seldom, however, that all the above conditions are met in practice. If all that a village level work has to do is, say, to supply fertiliser to a set of farmers whose responses he can predict, he may be able to rely exclusively on his mental processes. Even as the last link in the agriculture development administration, the VLW's tasks are not so simple, nor is the outcome predictable. This is further compounded by the possibility that he may be transferred after a period of time. In order that his experience is available to his successors so that he may be able to analyse various conflicting experiences, some codification of these becomes necessary. The administration thus becomes dependent on information.

Levels of administration are another reason for the generation of information. Successive levels need to keep track of the project. Since various levels would be involved to varying degrees and at varying times, the experience of an executive at a particular level may not be adequate for the conduct of his own activities. As tasks become more complex, a horizontal division of these would also become necessary. The exchange of experience would then be both vertical and horizontal. This exchange is essentially through a commonly understood information system.

The different managerial functions call for different kinds of information. For example, for the planning of IAAP, the Director of Agriculture called for information which aimed essentially at establishing the environment and the potential of the districts being considered for the programme. The auditors, on the other hand, were interested in measuring—qualitatively or quantitatively—the efficacy of the activities would be basically interested in information relating to “what resources are utilised in conjunction with what products and services are provided.”⁶ Budgets have attempted to deal with this question. A major and recurring critique of the existing budgetary systems, however, is that resource and the programme data have not

⁶Rober D. Lee, Jr. and Ronald W. Johnson, *Public Budgeting Systems*, Baltimore, 1973, p. 100.

been integrated. "At the implementation level, these (resource allocation and project execution) are needed to be integrated into a single and indivisible whole. Over the years, however, the two streams remained independently drawn." The audit reports in case of IAAP point to this. The technical and physical activities for the key-village scheme were covered in one set of reports and the financial statements in another. The former were prepared by technical officers, while the latter were handled independently by the accounts section.

A Desirable Performance Monitoring System

The basic objective of a manager in seeking information regarding a project is to determine how effective it has been in meeting its objectives. Here again, if the objective is directly quantifiable and the performance measurable in commonly accepted units, the task is relatively simple. For example, an engineer in charge of an earth work dam can measure the amount of work completed during a particular period and compare it to the target for the period.

Most agriculture developmental projects would, however, not be amenable to such measurements. In the first place, the objectives themselves may not be quantifiable. IAAP sought to achieve higher agricultural production through the so-called package approach. A five-year target setting exercise had been attempted, which tried to attribute the productivity increases with a degree of precision to the various components of the package inputs. The very concept of a package of inputs indicates, however, that they act in combination and not in isolation. The measurement of achievement based upon the fulfilment of targets for the distribution of each of these inputs will not necessarily lead to the measurement of the achievements of the programme. We could conceive of a situation wherein some of the cultivators use excess amounts of some inputs and the rest are short by a matching amount. In such a situation, the achievement for the distribution of the input would be upto the target, but that for the increase in productivity will not be, since it will depend upon an optimal combination at the individual farm level.

¹A. Premchand, *Performance Budgeting*, New Delhi, 1969, p. vii.

The above discussion does not mean that under such situations monitoring of performance is not possible. What it highlights, however, is that when the overall objective gets decomposed into discrete, measurable activities, measurement of the achievement of these discrete activities does not necessarily add up to the performance monitoring of the entire project/programme. It is essential to take into account the linkages between the activities that resulted in the initial decomposition.

It could be argued and quite rightly so, that in our environment, it is not quite possible to have directly measurements of agricultural production or the productivity increases. Indeed, the estimation procedure makes use of the data generated from the experimental farms, crop-cutting experiments, acreage estimates and their varietal decomposition and so on. There is a set of provisional estimates, which is eventually replaced by final estimates after a considerable time lag. It could be argued that this procedure is better suited for macro-estimates than for micro-estimates. The delay and the aggregation problems would further hamper the use of such methods for monitoring performance. The argument is extended by saying that proxy indicators, such as the area under high-yielding varieties, fertiliser and pesticide consumption and credit distributed could be used to monitor the performance.

This argument has the drawback discussed in the paragraph immediately preceding it. Before we attempt to develop somewhat different indicators, it might be useful to review the rationals for the activity classification. The two major activities for a 'package' programmes are supplies of the needed inputs and the demand creation for the inputs through extension and promotional efforts. Obviously, these two activities have to be sufficiently coordinated to avoid the creation of dissonance among the cultivators. An initial demonstration, if successfully carried out and given proper exposure, will lead to the demand for the inputs being demonstrated, and, subsequently, to an increased awareness of the technological potentialities.

The monitoring system should be able to reflect not only the end result of the offtake of the inputs, but also the process by which it was achieved. The data relating to demonstrations of various types carried out, their results, the audience for the

demonstrations—not mere numbers, but also by their extension methods used, all become relevant. Similarly, rather than the overall figures for the use of various inputs, their break-up according to holding classes would lead to a more realistic idea about their combinational efficiency at the farm level. Follow-up data on farms ¹⁰¹ which plans were prepared would be of a much greater interest to the project administrator. The number of samples of soils and water tested are routinely reported. Whether any recommendations were made on the basis of these tests and to what extent they were followed would throw considerable light on the relevance and the effectiveness of these activities.

The time element is also of relevance to the project administrator. Along with the quantities, the dates by which they were made available would help assess the timeliness of the supplies. Similarly, the data on the timing of the extension efforts could help establish the degree to which they were coordinated with the supply activities.

Qualitative and/or impressionistic data maintained by the officials could help fill in the gaps that would be felt in any purely quantitative effort at monitoring the performance. The impressions of the village level worker of the farmers' reaction to the various campaigns could add substantially to the information otherwise generated.

The project administrator having a clear idea of his information needs and designing the format to have them met, by themselves will not result in an improved monitoring of performance. In fact, the KVS prototype scheme had made detailed attempts to this end. Yet the evaluation reports make it clear that in actual practice the data were either not available or were not properly maintained. The evaluation studies also indicate the possible reasons for this state of affairs. The data were supposed to be maintained by the agriculture assistant/stockman. These functionaries, however, did not possess sufficient understanding of the project objectives.

To them, each constituent discrete activity/task-unit would become an end in itself. The interrelated nature of these various activities has to be understood and appreciated by those who are responsible for the ultimate execution of the tasks. Even if a functionary has specific responsibilities for only a

limited task, say, artificial insemination, an understanding of the overall project objectives is essential on his part, so as to enable him to appreciate the linkages between his tasks and those of the others. Furthermore, the ultimate implementors need to appreciate the importance of proper statistics by themselves for a programme of this nature.

In addition to an awareness of the needs of proper data, sufficient training for the collection of reliable information is necessary. Also needed is a consideration for the time and efforts for such exercises. The frequency of the various observations and the details which need to be observed need to be carefully spelt out. Otherwise data collection becomes an unrelated chore which will be either ignored or shoddily done.

The higher levels of bureaucracy often simply compile and collate data and pass it upwards. Undoubtedly, at each level some aggregation is needed, so as to keep the data in a manageable fashion. But so also is a review. The difficulties experienced and the results achieved by a village level worker would be best appreciated by his immediate superior, an extension officer. He must make an attempt at analysing the information made available to him. Instead of an upward transmission of these raw data, the interpretations and the findings based on the data would be better appreciated by the superior. Therefore, monitoring is not confined to the project head alone. Each functionary needs to undertake an analysis of the information coming to him. As the tasks become successively integrative at each higher level of administration, so does the monitoring. A field functionary might be interested in recording the progress of the component sub-activities entrusted to him. The extension officer and the sub-divisional would be interested, however, in estimating the contribution of these activities towards the achievement of the project objectives.

While at the lowest levels, data collection and review would become fairly routine and frequent, operations, at successively higher levels they are decreasingly so. At the district chief executive's level, for instance, a quarterly monitoring exercise, and an aggregative one at that, might suffice, depending upon the priority accorded to the project.

Words of Caution

In a paper such as this, necessarily only a few general considerations can be listed. This should not lead the reader to believe that data problems could vanish through simple exercise. Quite to the contrary, a great deal of situation-specific thought and ingenuity will have to be shown to deal with the data problems of agricultural management.

Herein lies the dilemma : a bureaucratic system can provide information that is routinised and fairly well integrated with the style of functioning of the system. Yet demands of effective management would require considerable flexibility and judgment insofar as data generation is concerned. How does one achieve it ?

It would be facile to attempt to answer this question. Indeed, in a somewhat generalised form, the question could be said to encompass the basic contradiction some thinkers see in the term 'development administration'. Insofar as the structure causes the data problems, it is tempting to say that nothing could be done. It is far more important to note that "the vicious interrelationship of structure and communication processes needs to be broken at some point and emphasis on concrete, quantified data base in communication processes is one way of breaking such (an) interrelationship".⁸

⁸V.R. Gaikward, "Bureaucracy and Communication Processes for Rural Development", *op. cit.*

J.C. Sarma

Information and Monitoring in Agriculture

Most of the developing countries of Asia and the Pacific Region have been formulating and implementing economic growth and raising the standards of living of the people. As agriculture forms an important sector of the economies of these countries, agricultural development programmes constitute major components of these economic development plans. The prosperity and welfare of the majority of the people in these countries are linked with the growth in agriculture. The nature and content of the agricultural programmes undertaken differ from country to country. These consist of a number of development projects or schemes drawn up within the framework of a policy and strategy which each country has adopted under the Plan. The formulation and implementation of these programmes and policies involve taking a number of policy decisions and executive actions at different levels. To be realistic and effective, these decisions and actions are to be based on timely, reliable and adequate information. Information thus plays an important role in both plan formulation and implementation and, in fact, it is the very basis for the entire process of planning.

Agricultural information is a broad term covering several aspects, depending on the interests it is designed to serve. Firstly, farmers need information regarding modern and scientific agricultural techniques and practices and how to adopt them. This information is often conveyed through extension personnel. Several audio-visual and other techniques including radio, television, films, posters and pamphlets and other literature, etc., are adopted for this purpose.

The second type of information which is generally in the nature of scientific documentation serves the needs of agricultural

scientists and research workers and keeps them informed of the researches and results of investigations carried out both within the country and outside, in the various fields. Examples of this type of information and dissemination are those provided by International Information System for the Agricultural Sciences and Technology (AGRIS) and the Current Agricultural Research Information System (CARIS) sponsored by the Food and Agriculture Organisation of the United Nations. The information system developed for this purpose is so advanced that most of the data is computerised and is available, as it were, at beck and call.

The third type of information is what is generally known as agricultural intelligence which relates to the dissemination of data regarding land utilisation, crop acreages, agricultural production, prices, stocks, etc., for use of general public, and the traders who are interested in purchase and sale operations and the farmers who are interested in the price and production situation not only for taking decisions on when and how much to market but also for planning of production.

The fourth type of information is what the Government needs for the formulation of policies and programmes and their implementation. The information system which the Government has developed and use for this purpose has two aspects, namely, data base and information flow. This paper deals with the information system needed by the Government insofar as it relates to agricultural planning and development.

REQUIREMENTS OF DATA FOR PLANNING

Basic Data

The most important and basic information in the field of agriculture is that giving current levels of production of different agricultural commodities including field crops, plantation crops, fruits and vegetables, livestock, poultry, fisheries and forest produce. Data on land utilisation, area under crops and livestock numbers come next in importance. For a study of the structure of agricultural organisation, information on the number and distribution of farms by size, their principal characteristics such as tenure and tenancy under which they are held, the farm population and their age composition, and levels

of education is necessary. For an assessment of physical resources that go into agricultural production, data on inputs used on the farms by way of seeds, fertilisers and chemicals, both farm-grown and purchased from outside, livestock feed etc., are needed. In view of the importance of assured water supply for securing high yields, information on availability and use of irrigation facilities is required. Statistics of prices are useful not only as indicators of supply and demand situation of agricultural commodities but are also necessary for several other purposes such as estimating national income, assessing the impact of prices on the national economy, determining the needs for price support operations, etc.

Information Needed for Fixation of Production Targets

Fixation of targets of production is an essential component of agricultural planning process. Before the production goals are decided, it will be necessary to assess the current levels of consumption and requirements of various commodities at the end of the perspective period of 15 to 20 years or the medium-term plan of, say, five years. To assess the adequacy of the consumption levels of food from the nutritional angle, their break-up into calories, proteins and other essential ingredients will be required. This means compilation of timely and reliable annual data on the output of crops, livestock and fisheries.

Development programmes for raising the output often take the form of measures for increasing the supply of inputs either individually or as package. For estimating the expected contribution of the programmes for encouraging the cultivation of high yielding exotic varieties and hybrids, information on the yardsticks of production, *i.e.*, the addition to production expected from one hectare under the exotic variety, say, of paddy as compared with one hectare under the local variety, is necessary. Similarly, yardsticks need also to be framed in respect of contribution that is expected from applying irrigation and fertilisers, either individually or in combination. Moreover, these yardsticks have to be determined at lower geographical levels corresponding broadly to the levels at which the initial planning is done.

Resource Surveys

Detailed information not only on the existing land-use classification but also potential land-use, groundwater possibilities that exist, soil classification and fertility facilitate agricultural planning. All these need separate resource surveys which may not strictly come under current agricultural statistics. For drawing up programmes of multiple cropping, wasteland reclamation or crop planning in general, more detailed information regarding land-use than available at present will be called for. For example, while the available data relate to the current utilisation of land for various purposes, only planned land-use surveys can indicate further potential.

On the fisheries side, both a survey of inland and brackish water resources and exploratory surveys of coastal and deep sea fisheries are essential prerequisites for planned development. Similarly in the forestry sector, preinvestment surveys of resources are necessary before detailed plans for exploitation and replantation are drawn up.

Data on Inputs

On the input side, besides the data on aggregate quantity of inputs used at the national or provincial level, estimates of consumption, cropwise, dosages adopted in relation to the optimum and relationship between the size of holding and the input application will be required. An important item on which adequate data are not available at present in many countries of the region is the loss due to pests and diseases, both on the field and during the post-harvest stages of threshing, marketing, transport and storage, and the use of plant protection and storage chemicals. As already mentioned, water is an important input in modernising agriculture. The details of the statistics of irrigation needed will vary depending on the requirements of planning. While in some situations broad information on area of crops irrigated and under different sources of irrigation is adequate, in other situations more detailed information regarding the nature of irrigation - whether seasonal or perennial, adequacy thereof, number, depth and frequency of irrigations, etc., become important. Data on the extent of low-lying lands subject to inundation and the drainage

facilities available have to be collected, particularly in the rice-growing areas in heavy rainfall tracts.

Power used in agriculture has broadly four components: mechanical, electric, animal and human. Periodical censuses giving the numbers of agricultural machinery and implements in use for agriculture, pumpsets installed, both electric and diesel, the types of engines used, etc., are conducted in many of the countries of the region. These data are relatively easier to obtain. They also form part of the farm inventories information on which is collected during the periodical agricultural censuses.

Technical Co-efficients

A choice among alternative projects could be made only when information on the cost of different projects and the benefits expected therefrom is available. The problems involved in the collection of data for working out cost-benefit ratios, internal rates of return and other co-efficients, which are relevant for project formulation, appraisal and evaluation, deserve separate consideration. Technical co-efficients or input-output relationships are important aides in planning. At the macro level demand estimates for various inputs for different production programmes can be derived from these relationships. At the micro level, farmers also can profit by the data on input-output relationships in their decision-making in respect of crops to be taken and inputs to be used. These data are often provided by farm management investigations. Data on responses of different crops to different inputs, singly or in combinations can also be obtained from properly planned trials on cultivator's fields.

Market Intelligence

For dealing with the problems of commodity distribution, information on marketable and marketed surpluses, the types of farms that contribute to the surplus, market arrivals and stocks is essential. Some of the countries of the region have price support policies assuring remunerative prices to the cultivators. For implementing these policies, representative data on prices received by the farmers and on costs of production of different crops and variations in costs over time and

space are also needed. For perishable commodities like live-stock products and fish, data on cold storage and refrigerated transport facilities are important.

In the family budget of the rural population in several countries of the region, agricultural commodities account for a major share. For working out cost of living index numbers, data on retail prices are required at periodical intervals.

Information Needed for Land Reforms

For assessing the magnitude and character of the problems of land reforms in each area and indicating the type of measures needed, information has to be built up on the distribution of farms according to ownership and operation, intermediate rights of different types of landlords, the extent of heritable and transferable rights in the land, types of tendencies—permanent, fixed period or annual lease holders—the rent paid and the extent of fragmentation. Most of this information is provided during the Agricultural Census. Many of these characteristics, however, do not exhibit wide changes from year to year.

Statistics of Employment

Statistics of employment, under-employment and unemployment are among the most difficult to collect, both from the point of view of concepts and from that of methodology. It is necessary to gain knowledge on the number of people who are fully and gainfully employed, those not fully employed but not available for additional employment, those available for full employment but not fully employed and those who are unemployed, for drawing up meaningful special employment programmes in the rural areas. Also, norms indicating the employment potential of various agricultural programmes are needed. Data on agricultural wages for different classes of workers have to be collected for the enforcement of minimum wage legislation as well as for working out cost of labour inputs in the cost of production of crops.

Other Data Including Derived Statistics

This listing of the various types of statistical data and information needed by the Government is only illustrative and is by no means complete. For, at the formulation stage of develop-

mental plans, a mass of data are required for the various sectors of the economy including agriculture. For example, data on national income and production and utilisation accounts become necessary for overall planning purposes. Also required are demographic data including rates of growth in population, both rural and urban, rate of rural-urban migration, dependency on agriculture and other population characteristics.

Once the basic data are collected, a number of derived statistics can be worked out to provide meaningful indicators which summaries a lot of detailed information. Examples of such indicators are growth rates in agriculture, index number of area, production and productivity, intensities of irrigation and cropping, index numbers of wholesale and retail prices, etc.

Levels of Periodicity

The levels at which the wide variety of data are needed and their periodicity depend on various considerations including the size of the country, the techniques of planning adopted, the type of constitution and political system under which the economy operates, etc. In a unitary structure, national level data are adequate for most purposes. In a federal structure, statistics are needed at the level of each of the constituent units of the federation. But where planning is done from below, these data will also have to be built up for each of the lowest planning units—the village, the block or the district.

With regard to periodicity, while aggregate data on area production of crops and the various resources that go into production at the national level may be adequate every year, it will be necessary to have the information classified according to farm size or broken up according to lower geographical units at periodical intervals for use in planning. For example, the consumption of fertilisers according to crop grown and size of farm will indicate the special extension measures required in different types of farms. Data on the dosage of fertilisers per hectare applied to different crops, and the response thereto could also be obtained at periodical intervals. Data on areas under high yielding varieties of crops, classified according to size of farms, availability of irrigation and type of soil may also be collected periodically, while every year aggregate data will be adequate,

Methodology

The methodology adopted for obtaining the information, the scope, the nature of data collected and the agencies employed for the purpose should take into account the various needs. Part of the data may flow as a by product of administration or through agencies implementing the programmes. But special surveys may have to be organised for collecting other data. There is also scope for integrating and coordinating the various surveys already being conducted and phasing the item coverage according to priorities.

Other Aspects

Better data lead to better policy formulation and planning and improve decision-making. This is not to say that planning should stop till all the information becomes available. The best guideline is to start with whatever data are available, take steps to improve their availability and refine the planning techniques. Thus improvement in the collection and quality of data is a continuous process.

The data collected should be kept under constant review and the tendency to assemble too many data without using them avoided. At the time of formulating a survey and designing the schedules, provision is made for every conceivable item, but when the time for tabulation comes very little of the data is tabulated and much less is reflected in the final report on the survey. A good principle in preparing plans for organising sample surveys or enquiries is to decide on the tabulation programme first and not to include any item in the schedule which does not figure in the tabulation programme and conversely tabulate all the items on which information is collected in the schedules.

Moreover, every time information on a particular item is required, a new survey is planned, staff recruited and trained and disbanded as soon as the survey is over. This leads to wastage of resources. It should be possible to have an integrated system of surveys covering different items of the information in different years. It may be possible to collect information by extending the scope of existing surveys instead of starting a new survey. For example, data on cropwise inputs can be collected as part of annual crop estimation surveys. Periodical agricul-

tural censuses also provide an opportunity for collection of useful information. Cost of production and farm business surveys also form an additional source for collecting essential data required for planning.

INFORMATION SYSTEM

The information required by the Government for planning and policy formulation and implementation can be subdivided into four categories : (i) for commodity procurement and distribution or import/export trade policies, (ii) for plan formulation, (iii) for monitoring and watching the progress, and (iv) for evaluation of policies and programmes. In India's Draft Fifth Five Year Plan, pointed attention has been drawn to the gaps in the information system required for implementation of the various Plans.

While there have been no doubt several improvements in recent years in the statistical base for planning in several countries of the region a comparison of the available data with the needs listed above, shows that there are considerable gaps to be filled, which need early attention.

The information system required for planning is much wider than the basic data and covers the various types of quantitative and qualitative information needed at the various stages of plan formulation and implementation. The setting up of realistic objectives and goals and the determination of policies and strategies to achieve the goals, do require a variety of data. For example, in the formulation of food production targets, on the demand side, data are required on estimated future consumption. For this as already referred to, such information as existing and future levels of population, present availability of food, income elasticity of demand, etc., will be necessary. Simultaneously, on the supply side the potentiality for production, administrative and organisational capacity to achieve the required levels of production and the infrastructure needed to enable the potentiality to be translated into actual feasibility have to be determined with reasonable accuracy. Thus, at this stage, information is required on the physical programmes to be undertaken, the responses or expected benefit therefrom, the estimated cost and the cost-benefit ratios. After the choice of programmes is made, the next stage is to keep a watch

on the progress in terms of physical inputs and the outputs. Data on procurement, allocation and utilisation of various resources are needed at this stage. At the end of the year or the Plan period, the data on not only the physical inputs that have been actually utilised but also on the output realised have to be compiled. This output in the case of agricultural commodities depends on the weather factor also and introduces a certain element of uncertainty.

Another illustration of the type of information relevant for planning is that required for preparation of integrated development projects. For instance, if an integrated horticultural development project or a fisheries project is to be prepared, the first step is to undertake a preliminary survey of the area, giving a broad indication of the potentials of the area and the demand for the products. If this survey indicates that there is scope for the project, the next stage is to prepare the feasibility Report covering not only the production of fruits or estimated fish catches, but also all the aspects relating to transport, processing, marketing, storage and distribution, etc. The investments needed at each stage and for each component, the benefits expected from it and its economic viability are to be worked out. For preparing such a project a variety of information is required. After the feasibility report is prepared, it is appraised, particularly with regard to its technical, economic, financial, commercial and organisational feasibility and viability with a view to finding out whether the project is bankable. The project is then sanctioned. During the stage of implementation, a watch is kept over its progress and after completion of the project it is evaluated. The whole range of information required during these various stages has to be pre-planned and provided for.

The information required at the Plan formulation stage is futuristic in nature and that at the time of watching the progress, is current. At the time of evaluation, the data required are related to the past. At the implementation stage, the feedback of the progress data have to be arranged with speed so that any modifications in the programmes could be carried out in time. Thus, timeliness, accuracy or reliability and adequacy are the important characteristics which one should look for while considering the information system.

It is usual that either there is too much of information or too little. Just as inadequate information handicaps proper planning, excessive information results in a waste of resources and hence there is a need for keeping a proper balance between the requirements and availability of information. Easy access to the available data is also an important consideration to be kept in view. Lot of information often lies buried in the files and is not analysed and put out, thus losing much of its utility.

MONITORING SYSTEM

Apart from a proper information system, an appropriate monitoring system is also very crucial for realistic implementation of the plans. Its importance justifies a detailed consideration of the various aspects of this system in the following paragraphs.

Scope of Monitoring

As already mentioned, at the time of formulation of a programme or a project or a scheme, a number of targets both physical and financial, are established. As soon as it is sanctioned, for its successful implementation a watch is required to be kept on the progress of the various phases of the programme or project or scheme in relation to the targets set forth, through progress reports received from the operating and implementing agencies. The physical targets may cover the number of wells to be constructed or fertilisers to be distributed or extent of area to be covered by improved varieties of crops or the number of fry or fingerling to be distributed. The financial target may be the cost of implementing the programme or the amount of loan to be distributed or subsidies to be given. The objective of these progress reports is not only to provide information—whether the progress is according to schedule or not—but also to indicate the reasons for slow progress, if any. It should be possible to locate the bottlenecks and take prompt remedial action wherever necessary. In fact, it should even be possible to anticipate future shortfalls as well as problem areas well in advance so that a special watch may be kept in such cases. Sometimes it may become necessary to re-schedule the various phases of the programme even after remedial measures are taken to improve the performance. Also, after the programme

or project is completed, one has to assess whether the benefits expected from the programme have been realised. All these aspects are covered by the term 'monitoring'.

Several of the projects and programmes are interrelated and inter-dependent. The shortfall in one may affect the other projects also. Even within the project the fulfilment of the targets in one component without the corresponding achievement in the other related and inter-dependent components may cause several imbalances. For example, the progress in increasing the production of milk in any area has to be matched with the arrangements for marketing and processing of milk. If timely information is available about the progress of the different components, it may be possible to take corrective measures. For this, it is necessary that the feedback information is furnished to the implementing agencies promptly.

In its broad concept, monitoring will not only include the quantitative appraisal of performance of the programme or project but also a qualitative assessment whether the objectives of the programme or project are being fulfilled. For example, in the Small Farmers Development Agencies Project, not only the progress in terms of the number of small farmers actually benefited against the targets has to be watched but it should also been seen whether the beneficiaries are in fact the small farmers and whether they have really been benefited. At the same time, monitoring does not include *ex-ante* programme appraisal or the post-implementation evaluation. Monitoring system is essential not only for improvement of plan implementation and better plan formulation but it has also a direct relationship with both these aspects. Once the plan is finalised and the physical and financial targets are decided and each of the operations is determined, this forms the starting point of monitoring. The information that is obtained during the course of monitoring will be useful for post-implementation evaluation of the projects. If there is close collaboration and cooperation between monitoring agencies and those responsible for post-implementation evaluation, duplication of effort can be avoided.

Limitations of Monitoring of Agricultural Projects

Monitoring in agriculture in developing countries has several

limitations arising out of the structure of agricultural organisation and the biological nature of production. In several countries, subsistence agriculture and commercial agriculture co-exist in various degrees. Agriculture is also practised by a large number of small producers, each of whom takes his own decisions as to what, when and how to produce. Some of the decisions may appear at first sight not to be rational from the economic point of view, although each producer may have his own reasons for adopting the practice that he has done. Agricultural programmes are also implemented through a large number of agencies over widely situated locations.

Further, weather plays a prominent part in determining the output from land except in a few cases where assured irrigation is available. The agricultural production programmes for distribution of improved seeds, fertilisers and chemicals may have been actually implemented according to targets, but if the weather is unfavourable the expected targets may not be achieved. Also, if the weather is not favourable there will be shortfalls in the use of fertilisers, although they may be available in plenty.

Proforma of Progress Reports

The actual proforma to be adopted in monitoring varies from project to project and programme to programme. However, the physical targets under the project should be specified and the report should indicate the progress achieved both, during the month/quarter and cumulative progress upto the end of the month/quarter. In some cases the progress need to be watched at weekly or fortnightly intervals, particularly during initial periods. Similarly, provision should be made for indicating the outlay/expenditure both budgeted and sanctioned and the actual amounts spent under each head. The broad heads under which detailed financial data are required vary from project to project. But broadly information is required on staff, buildings, equipment, materials, subsidies, grants-in-aid, etc.

If the project is expected to yield any revenues, these should be mentioned with a view to finding out whether the financial flows have been according to the programme. In the case of any shortfall, either in physical targets or financial outlays, or expected revenues, the reasons for the shortfall should be

ascertained and indicated so that remedial steps can be taken.

The proforma to be adopted for the progress report should be simple. While each scheme has its own peculiarities and calls for different content of the proforma, yet it is important that there should be broad uniformity in the basic content. The broad figures given should permit consolidation of information for different schemes in respect of essential details. There should be enough provision for giving a detailed account of the difficulties encountered. It must be made clear that the objective of calling for the information is to remove the bottlenecks and help in speedy implementation rather than finding fault with the implementing agencies for any slackness in progress. It is because of the latter fear that agencies responsible for filling up the progress reports have a tendency to exaggerate the progress or gloss over difficulties and deficiencies.

Levels of Monitoring

The levels at which monitoring is to be done depends on the level at which planning is done. In a federal structure, and where economic development is a provincial responsibility, monitoring units will have to be established both at federal and provincial levels. Where planning is done at levels lower than the provinces, e.g., district or watershed, the monitoring unit should also be located at that level so that the advice of the unit is available to the planning authorities. It is not necessary that the same report should be sent to all the levels. At the district and operational levels, a more detailed report may be furnished while to the higher levels a condensed report may suffice. Further, in agriculture itself, monitoring can cover the entire sector including the sub-sectors of crop production, livestock, fisheries or forests or it could cover individual sub-sectors. It may also be confined to certain important projects or programmes or even to certain geographical areas. In addition, each major project should have a monitoring unit and there should be adequate linkages between these and those at the provincial and federal monitoring units. However, decentralised monitoring system is more appropriate for agriculture. Besides periodicity and format, the persons who should report, those responsible for supervision, the agency for receiving the reports, analysing them and preparing a report for further dissemination

to different levels should be specified clearly. The results of monitoring should be made available not only to the authorities at decision-making levels, but also to those who have to take remedial measures. The reports will also be of interest to the general public. There is also a new clientele for the monitoring reports, namely, the international agencies, particularly in respect of projects financed by them.

Monitoring is not necessarily a more economic, statistical or financial exercise. It does involve expertise in other fields like engineering, agricultural science, etc. Monitoring can, therefore, be best done by an inter-disciplinary group of specialists some of whom can even be part-time.

The information system in agriculture required for each country has to be evolved within the country depending upon the requirements and availability of data. As the needs rise, improvements have to be brought about in the data base. This improvement in data is a continuous process. The nature and scope of the data, the extent of detail, the periodicity and frequency, the geographical level at which they are needed, and the precision of the estimates have to be carefully examined. These data are to be based on variety of methods including administrative reports, sample surveys, periodical censuses, experimental results, etc. In some cases the data may be collected through part time agencies while whole time staff are required to be employed for certain types of data collection. Both the types of agencies require adequate training. Necessary horizontal and vertical linkages have to be developed between the information system in agriculture and that in the rest of the economy. An efficient monitoring system is an essential prerequisite to sound agricultural planning.

Evaluation of Agricultural Programmes

INTRODUCTION

Evaluation of programmes has been gaining an increasing importance in recent times. It is not necessary to emphasise that "adequate assessment of existing and innovative programmes can be a vital force in directing social change and improving the lives and environment of community members".¹ The complexity of the modern organisation has inevitably resulted in an increasing gap between the targets planned and the results actually achieved. This seems more true in relation to the efforts of the comparatively under-developed or developing countries. Development of agriculture involves the introduction of innovative behaviour and embracing an array of new functions. It implies new situations and new responsibilities. The past in such a situation does not provide a guide nor is the future quite clear. It is in this context that evaluation assumes special importance. Without an effective evaluation, it may not be possible for an administrative agency to perform its vital managerial functions of planning, organising, controlling and directing the administrative apparatus.

There are different approaches to evaluation. Often a purely informal approach is considered sufficient. Annual reports are also in a sense an evaluation. The purpose of regular reports

¹F.C. Caro (ed.), *Readings in Evaluation Research*, Russel Sage Foundation, 1971.

Specially the following articles:

- (a) Evaluation Research—An Overview, F.G. Caro, p. 1-29.
- (b) Social Research and its Diffusion, A. Cherns, p. 63-71.
- (c) Programme Evaluation Models and Implementation of Research Findings, H.C. Schulberg and F. Baker, p. 72-80.
- (d) Utilization of Evaluation, C.H. Weiss, p. 136-142.
- (e) Methodological Problems and the Evaluation of Innovation, Martin Trow, p. 81-94.

is to provide timely and dependable information on the execution and the progress of the schemes.

The reports to the useful should not only contain statistics but also an analytical review of the progress. Evaluation could also be considered as a step in programme planning (identification of the problems, objectives, organisation, implementation and evaluation) where it could help in restating of objectives. For the purpose of this paper evaluation is thought of as a formal activity. This would mean using social research methods for conducting evaluation.

DEFINITION AND PURPOSE

The various approaches to evaluation have looked at its definition differently. Some have emphasised the function of information seeking aspects. Measurement of effectiveness of emphasis (procedures) have been mentioned by others. The attainment of goals and the impact of the key variables has been mentioned in other definitions. For the purpose of this paper, the following is suggested as a working definition:

"Evaluation is a systematic assessment of progress and of the role of implementing machinery, an analysis of problems and difficulties in the effective implementation of a programme and an indication of the corrective measures necessary to be taken."²

Evaluation research is essentially applied research. The definition gives an idea of the purposes of evaluation, *viz.*, to get an indication of the corrective measures to be taken. More specifically, the purposes of evaluation could be:

1. To determine progress;
2. To determine the distance, travelled in a given time towards the ultimate organisational goal in relation to the total time set for such achievement;
3. To determine the shortfalls and the reasons thereof, *i.e.*, to judge the efficacy of methods; and
4. To provide guidance in the execution of programmes.

²V A. Pai Panandiker, *Development Administration in India*, Macmillan, 1974.

Special article

(a) Reporting, Appraisal and Evaluation in Development Administration, A.P. Barnabas, p. 174-195,

While the above purposes are concerned in particular with programmes and their implementation, evaluation could also have purposes which may have direct bearing on policy and accomplishment. Evaluation could provide a sense of satisfaction to the officers and the men connected with implementation of the programme. It could also provide a greater sense of confidence as it gives scope for timely and corrective action. An evaluation study could provide a basis for establishing public relations. It could also help in developing an informed and responsible public opinion. This should evoke better public co-operation which is an important factor in any development programme.

In India there is a Programme Evaluation Organisation which is located in the Planning Commission. Originally, it was set up to evaluate community development programmes. The task entrusted to the PEO would be of interest:

1. Keeping all concerned apprised currently of the progress being made towards accomplishing programme objectives;
2. Pointing out those extension methods which are proving effective and which are not;
3. Helping explain why some recommended practices are adopted while others are rejected; and
4. Punishing insight into the impact of national extension and community development programme upon rural economy and culture.

The tasks defined in a sense is the operationalisation of the purposes of evaluation in very specific terms.

EVALUATION AND THE ADMINISTRATOR

Evaluation research although becoming more accepted, its usage is still restricted. There are a number of practical problems which Caro³ lists which come in the way of effective and greater use of evaluation. "Traditionally, decision-makers have not given evaluative research a major role in policy formulation and change in social programming".⁴ The tendency is to be

³*Sociological Methods and Research*, Vol. 4, No. 1, August 1975, Special issue on *Validity Issues in Evaluation Research*, Sage Publications, Beverly Hills, London.

⁴*Extension Evaluation*, Allahabad Agricultural Institute, December 1957.

satisfied with informal evaluation. Objective evidence is rarely the basis of modification of policy programmes. At times, the expenses and the practical utility are questioned by the administrators. Moreover, a systematic assessment may create problems for administration. "...Evaluation results the almost inevitably disappointing." Another writer observes that "ambiguity in results helps to protect administrator where there is a possibility of failure",⁵ whereas evaluation might be more definite. There is the problem of the relation between the administrator and the evaluator. The evaluator may raise basic questions about organisation and policy which the administrator may resent. The status of the social scientist is usually ambiguous and as such creates strain in relationship. The criteria for judging the efficiency of an evaluator cannot be the same as other members of the organisation. Such a differential treatment can create difficulties in the organisation.

What is being suggested here is that evaluation of any programme has to be a well-thought out operation. The problems mentioned can be handled if evaluation is taken seriously. Where there is a real concern for obtaining systematic and objective evidence, adjustments can always be worked out.

CONTENTS OF EVALUATION

It has been suggested that one could consider four areas for evaluation : (1) Effort (the amount of action); (2) Effect (results of effort); (3) Process (how an effect was achieved); and (4) Efficiency (factors in relation to cost).

These categories point to the factors which have to be considered in assessing the impact of the programme. Evaluation is concerned with impact and accomplishment. It may not be possible to assess all the aspects that might have a bearing on the accomplishment. Through careful analysis, it would be necessary to delineate key elements or indicators which have to be taken up for study. From the view point of an agricultural programme, the following may be some of the crucial factors:

1. Policies and objectives for agricultural development;
2. Specific programmes;

⁵*Evaluation Study of the High Yielding Varieties Programme*, Programme Evaluation Organisation, Planning Commission, Government of India, August, 1968,

3. Organisational set-up;
4. Personnel for implementation;
5. Operating methods and procedures;
6. Time factor; and
7. Cost.

In order to evaluate the above factors, specific questions will have to be asked under each of them. For example, under policy the following questions might be asked:

1. Is the policy clearly defined?
2. Can the policy be operationalised in terms of action programmes?
3. Is the policy in keeping with the general aim of development?
4. Has the policy taken into consideration the level of the maturity of the group and the resources available?
5. Is the policy dynamic, *i.e.*, can it lead from one level of achievement to higher levels of achievement?

If there is a differentiation between immediate, intermediate and ultimate objectives the evaluation study would have to take that into consideration. It could study the relation between immediate and ultimate objectives.

With regard to the personnel any evaluation study would have to take up questions such as:

1. What kind of staff are required in administrative/managerial and in operational/technical capacities? Are the qualifications of the personnel in the organisation in keeping with this?
2. Are the jobs to be performed clearly defined?
3. How are the staff recruited? What of the tenure?
4. What are the policies with regard to training, promotion, incentives etc.?
5. Are they aware of the programme objectives?
6. Do the people work in the department as a team to accomplish the objectives?
7. What are their attitudes towards work and people?
8. Are they satisfied with working conditions, placement and promotion policies?

The questions suggested above are not exhaustive but are indicative of the type of specific questions that need to be asked under each of the headings.

METHODS OF EVALUATION

The primary function of evaluation is to appraise comprehensively a programme, its implementation and its impact. It is suggested that the difference between basic research and evaluation research is one of purpose rather than method. Evaluative research applies the method to problems that have administrative consequences. As agricultural development programmes are concerned with large sections of people, the most useful methods and techniques appear to be those developed in social sciences and in particular the survey and case study methods. The experimental method can also be used if the programme is set up in such a manner so as to have control groups. This automatically means adherence to all the steps involved in a systematic social science research, *viz*, the formulation of problem (may be hypothesis), the selection of sample,* the collection of evidence, the analysis of data and the drawing of conclusions. On the basis of the conclusions, suggestions can be made with regard to changes that may be necessary for a more efficient implementation.

The first step for an evaluation study is generally to spell out in detail the problems to be studied. The problems will have to be defined in operational terms so as to get measurable data and information on all key points. If bench mark data is available, it should be of immense value. In case, such information is not available, one may have to fall back on records maintained by the department. Much of the current evaluation is confined to quantitative measurement. But in a broader sense it should include tangible as well as intangible results achieved in relation to the principal objectives of the project evaluated. Innovative behaviour could be a result of introduction of a programme for agricultural development. This means that the evaluative measurement has to be made not only against the quantitative targets set but also against certain values. Thus conceived, evaluation will be much broader than mere statistical analysis.

MODELS FOR EVALUATION

Schulberg and Baker⁶ suggest two research models for

*For an evaluation study the universe is the "target group".

⁶Schulberg and Baker, *op. cit.*, pp. 72-80.

evaluation. These are:

1. The goal attainment model.
2. The system model.

Briefly stated, the goal attainment model can be defined as follows:

"It starts with an initial goal setting, proceeds to determine measures of the goal, collects data and appraises the effect of the goal and then modifies the initial goal on the basis of the collected data."

One of the problems with this model is that it assumes that specific goals can be evaluated and modified in isolation from the other goals sought by the organisations. Moreover, the evaluator is limited to measuring whether the goals have been attained whereas he should be free to question the setting of goals themselves.

Among the variables that can affect the accomplishments are: objectives, organisation, programme activities, personnel, resources, etc. Taking this holistic approach the system model may be more relevant for evaluating the programme of agricultural development. The system model is concerned with establishing a working model which is capable of achieving set goals.

"In addition to the achievement of goals and subgoals, the system model is concerned with effective coordination of organisational sub-units; the acquisition and maintenance of necessary resources; and the adaptation of the organisation to the environment and to its own internal demands."

The system model in contrast to the goal attainment model which is concerned with the degree of accomplishments, establishes the degree to which an organisation realises its goals under a given set of conditions.

Whatever model one uses, evaluation is basically a process of measuring accomplishments. There are some prerequisites which would facilitate evaluation studies. These are:

1. A clear statement of policy.
2. An indication of the targets to be achieved.
3. An accepted set of norms of performance.
4. An information system which ensures speedy and accurate flow back of information to the decision-making levels of organisation.

Evaluation can be undertaken even if some of the above prerequisites are not met. It could indicate some deficiencies with regard to these prerequisites as well.

ORGANISATION FOR EVALUATION

If evaluation is accepted as an integral part of programme development, there is need for an organisational set-up. The debate whether the evaluation organisation should be located within the implementing department or whether it should be an outside agency continues. In favour of the outside agency, it is suggested that: (1) It can be more objective; (2) It can question the basic premises; (3) The problem of status is not serious.

An evaluation cell within the department would have detailed knowledge of the organisation and the programmes. Evaluation could be a continuous process.

The other factors that need to be considered in setting up an evaluation organisation are:

1. Credibility of the report.
2. Establishing relationship.
3. The task definition and cooperation from the programme staff.

If primary data is to be collected, an outside agency would probably be more effective. The data collected may not be sufficient to evaluate all the variables that have been mentioned earlier. It would seem that on the whole, it is a better proposition to have an evaluation done by an agency outside the department. The universities, research institutions, could be requested to conduct evaluation.

In India, various approaches are being adopted. The Programme Evaluation Organisation was set-up in 1952 as an independent organisation located in the Planning Commission, mainly to assess the working of Community Development Projects. Later on, its scope was enlarged to cover the rural sector with special emphasis on agricultural programmes. The functions of the Programme Evaluation Organisation are:

1. To study the progress of programmes and to measure the impact on the socio-economic life of the rural people;
2. To ascertain the reasons for the success or failure with respect to different items of the programme.

3 To indicate the direction in which the improvement may be sought.

Some ministries have evaluation cells within their own department. But these tend to be more for collection of statistical data rather than performing the role of evaluator as envisaged earlier in this paper. At times, the ministries also conduct *ad hoc* evaluation studies in their respective fields. The universities and other research institutions have also been involved in evaluation studies. A few studies have also been made by voluntary organisations.

It may be suggested that as evaluation is an important task, there is need to have an autonomous organisation with representatives from the government, the implementing department and experts (both—technical subject and social sciences). The autonomy has to be emphasised so that the organisation can function effectively and render frank advice even on policy matters. Such an organisation may have to be directly under the chief of the government.

THE USES OF EVALUATION

Evaluation of a programme assumes that the results of the study would be used for making changes in the programme. However, this is more easily said than done. The difficulties for making use of the findings may stem from many areas. It is possible that the limitations* of research may hinder effective utilisation of the findings. Also, evaluation research does take time and hence it would have very little effect on short-term programmes for police decisions.

At times evaluation research is undertaken to justify decisions already taken or to postpone action. The differences between findings of the evaluation and the informal assessment of the administrators may vary. This would also result in the non-use of evaluation research. The relationship between the administrator and the evaluator has to be clearly worked out. The secondary use of research may be of more importance for the administrator such as using outside advice to settle an internal dispute, using the findings for justifying decisions already taken or it could be used for expanding one's own department or evaluation research can be used for deferring any immediate action on a controversial issue. It is also possible,

*Limitations of data, time, resources, etc.

evaluation may be undertaken for purposes of prestige or to fulfil a requirement. The relations between administrator and the evaluator are likely to be under strain as it is always possible that the evaluation findings may not be palatable to the administrator. It is, therefore, necessary that the evaluator has a working understanding with the administrator. This relationship could make all the difference both in getting insights into the programme operation as well as using of the information by the administrator.

The chances of utilising the findings of the evaluation would be much greater if the following steps are taken:

1. Identification of the potential users of evaluation results and selection of the issues of concern to them as a major focus of study.
2. Involvement of administrator and programme practitioner both inside and outside of the project in the evaluation process.
3. Prompt completion of evaluation and early release of results.
4. Effective methods for presentation of findings and dissemination of information.

The evaluation can result in the revision of policy, changes in the programmes, modification in the methods used or reconsidering the target population.

If evaluation is considered a part of the planning process then the finding of the evaluation would become very important for decision-making. If the evaluation is of an *ex-post-facto* type then the findings can be used in making necessary adjustments while launching new programmes.

CONCLUSION

To a large extent the decision makers have depended on informal approaches to evaluation. Large amounts are invested in agricultural development programmes. Often legislation which is expected to change the relationship in the rural society has been passed. Yet, there is rarely systematic collection of evidence of the impact of the programmes and policies. This could mean that further amounts are spent without really knowing whether the programme is bringing about the desired results.

There is a strong argument, therefore, for including evaluation as a part of programme process. Initial difficulties will be there as there are not too many social scientists who have been involved in applied research. When evaluation has been done, the response has not been encouraging from the policy-makers or the administrators. In the ultimate analysis a programme must bring about the desired changes through innovative behaviour among the people for whom the programme is meant. Whether this is happening should be of concern to the administrator, to the agricultural scientist and the social scientist. It is in their combined effort to look at the programmes objectively that the implementation can become more effective.

Case Studies in Evaluation

INTRODUCTION

Two case studies are being presented.

Case I is an evaluation of an experimental project in Uttar Pradesh. The experiment was to study the effectiveness of different methods of approach and workers with different levels of education. It was a time-bound programme and the evaluation was *ex-post-facto*. The evaluation was done by the internal staff.

Case II is an evaluation study of the high-yielding varieties programmes. The programmes was undertaken by the Ministry of Agriculture and the evaluation was done by the Programme Evaluation Organization.

In both these cases the purposes have been indicated and the methods used have been described. Some of the conclusions arrived at have been mentioned. The conclusions mentioned are those that could have administrative implications.

The cases are presented in brief as they are only for illustrative purposes.

CASE I

EVALUATION OF AN EXTENSION PILOT PROJECT

An experimental project was set up in one of the districts of U.P. The purpose of the experiment was:

1. To compare the performance of different categories of resident village workers based on educational qualifications and training.

2. to compare the effectiveness of different methods of approach practised in the four areas of the project. The initial emphasis in each of the four areas was--agriculture, literacy, home and family and felt-needs.

The area of the project was divided into four circles with about one hundred villagers in each. In each of these circles different methods of approach, *i.e.*, initial emphasis was

employed, namely, agriculture, literacy, home and family and felt needs of the people. Persons with different backgrounds and training were employed as resident village workers. The categories of workers were: college graduates, intermediates (two years of college), high-school graduates, constructive workers (those trained in the Gandhian institutions) and husband and wife teams (couples). Two workers from each of the above categories were placed in three circles and in the fourth-one which had a larger population, three from each of the categories were located. The total number of workers was 45.

COLLECTION OF DATA

The basic data was gathered from the daily reports which the workers submitted to the headquarters. The report had information on the following:

The number of contacts made in the village.

The number of villagers contacted in villages.

The number of villagers who changed their practices

The different extension methods used to bring about the changes.

The data was available for a period of two years. For the sake of convenience and comparison of the achievements of the workers, the period was reduced to a common base of 100 days worked per worker. (Thus for example if a worker worked for 150 days and made 450 contacts he can be said to have made 300 contacts in 100 days). This reduction to a common base was necessary to make it possible to compare the relative effectiveness of the different categories of workers as well as the methods of approach. The criteria for measurement used were:

1. Rate of practice change.
2. Rate of contacts.
3. Ratio of contacts to practice change.
4. Ratio of number of villages who changed practices to villagers contacted.
5. The progress of achievement over a period of time.

The second aspect which was to be measured through this pilot was the relative effectiveness of the four different methods of approach through the initial subject matter emphasis (men-

tioned earlier) on rate of acceptance of new practices. In order to measure separately the influence of "Method of Approach" it was necessary to keep the factor of personnel constant. This was done by placing some workers from each category in all the circles.

SOME OF THE FINDINGS

1. Differences in the educational level and the type of training have a bearing on the performance of the village workers.

2. Among the single workers, the graduates turned in a higher level of performance than the other categories of workers.

3. Couple units were able to get relatively more practice change per unit of time, to make greater number of contacts than any of the other groups.

4. Among all categories of workers an overall improvement in their efficiency with the passing of time was indicated.

5. The largest number of practice changes was affected where the felt-needs approach was followed

6. Of the four approaches (emphasis) tested, placing primary emphasis on agriculture resulted in the smallest number of practice changes.

7. Emphasis on felt-needs got the extension programme off to a good start in the first season and maintained a superior rate of practice changes throughout the experiment while emphasis on agriculture resulted in the least significant improvement after a comparatively slow start.

8. Achievement in literacy was the highest where it was the initial emphasis.

9. It was not possible to establish any correlation between various categories of workers and methods of approach used.

There was no survey conducted of the area before the experiment was launched. It was assumed that all the four circles were homogeneous. The evaluation study showed that in the area where agriculture was the initial emphasis, the percentage of people engaged in agriculture was 75 whereas it was 88 in the felt-needs circle. So also with literacy. Whereas it was 15 per cent in the agricultural circle, it was 25 per cent in the felt-needs circle. In an experiment, the variables need to be

held constant or due weightage has to be given to them in arriving at conclusions.

CASE II

EVALUATION STUDY OF THE HIGH YIELDING VARIETIES PROGRAMME

In 1967 the Programme Evaluation Organization made an evaluation study of the high-yielding varieties programme. The main objective of the study was to analyse the progress and problems of the programme. More specifically, the objectives of the study were laid down as follows:

1. to assess the spread of the various high yielding varieties in different parts of the country and also to determine the extent of such spread;
2. to ascertain the reactions and attitudes of cultivators participating in the programme and also examine the problems of non-participating cultivators, and
3. to study the problems of implementation of the programme at different levels of administration such as state, district, block* and village.

METHODOLOGY

The field work was carried out in three rounds to ensure better reliability, depth in data to be collected, particularly from the cultivators from as many as 123 sample villages extending over 41 development blocks and districts and all the four crops grown in the season namely; paddy, maize, bajra and jowar (millets).

At the state, district and block levels, all the official and non-official agencies concerned with the implementation of the programme were contacted for collection of data on the main aspects of the programme. The instruments of observation at these levels were:

- (a) guide-points for the collection of qualitative information, and
- (b) schedules for collection of quantitative data such as area covered, quantity of seeds, fertilisers distributed,

*The block is an administrative unit with about 70,000 to 100,000 population for community development programmes.

credit disbursed, etc. The participating (865) and the non-participating (622) cultivators were interviewed through a detailed schedule-cum-questionnaire.

For selecting the districts, the blocks and villages, the probability proportional sample was used. Systematic stratified sampling was used to select the cultivators

SOME FINDINGS*

1. It was observed that practically no trial demonstrations were reported to have been conducted under actual farm conditions prior to 1966-67. The experience of the current season suggests that it may not be prudent to continue the programme merely on the basis of few tests and experiments conducted in the research station. There is sufficient justification to organise a systematic programme of trial-demonstration on a scientific basis at all levels in the long-term interest of the programme.

2. There seems to be an urgent need to collect firm data regarding irrigated area sourcewise and also potential created by such sources from time to time so as to facilitate better planning of agricultural programmes.

3. There is need for intensifying research effort in evolving new strains by combining the characteristics of the exotic varieties such as better responsiveness to fertilisers, with greater resistance to particular types of pests/diseases, finer quality of the grain, etc., of some of the existing improved varieties.

4. Detailed administrative instructions and technical guidelines were provided from the state headquarters to the district, block and village level regarding the care that was to be exercised in selecting suitable areas and willing cultivators to take up the programme. In many of the selected blocks such instructions remained more or less on paper and the lists were prepared rather hurriedly. This aspect deserves to be tackled much more seriously if planning and implementation at the effective levels were to have any meaning at all.

5. The achievements for the different crops varied. In paddy only 43 per cent of the target area was covered, jowar 22 per cent and maize 35 per cent and bajra 50 per cent. The criteria for fixing targets needs to be reconsidered.

*Only a few of the findings are given for illustration.

6. Field observations showed that supply bottlenecks in regard to seed persist in some of the observed areas resulting in delayed selection of both areas and cultivators.

7. The proportion of funds disbursed against the allotted amount were low. Procedural delays, the problem of defaulting members, poor recovery of cooperative loans leading to heavy overdues, too many deductions were some of the causes.

8. About a fifth of the cultivators in the selected villages reported adoption of the high yielding paddy varieties during the season. So also jowar and maize. For bajra it was about one-seventh. The proportion adopting increased with the size of the operational holdings of the cultivators and was as low as 14 per cent among the cultivators having operational holdings of less than $2\frac{1}{2}$ acres compared to 49 per cent among the cultivators of the biggest holdings size of 50 acres and more for paddy varieties.

9. More than 75 per cent of the current season participants desired to continue the high yielding paddy varieties. Among the selected non-participating cultivators more than half of them wanted to adopt the high yielding paddy varieties for the first time during the next season thereby indicating large adoption in the coming season.

10. The reason for non-adoption of the high-yielding varieties during this season were reported to be:

- (a) Physical limitations such as lack of irrigation or drainage facilities.
- (b) Higher cost of inputs and labour in the cultivation of these varieties.
- (c) Non-availability of seeds.
- (d) Greater risk because of varieties being more susceptible to pest-diseases.
- (e) Lack of sufficient knowledge of all the practices.

11. Nearly half of the non-participating cultivators reported their willingness to adopt high yielding varieties during the next season. The programme was more or less well-received by the farmer community and the adoption is expected to substantially increase, subject to physical limitations.

Country Profiles



1

1

1

1

M. Nurul Haque Miah

Country Note on Bangladesh Agriculture*

Bangladesh is basically an agricultural country. About 91 per cent of her people live in the rural areas depending almost exclusively on agriculture. Eighty per cent of her civilian labour force are engaged in agricultural operation. Agriculture also contributes about 56 per cent to the Gross Domestic Products and provides bulk of the foreign exchange earnings through export of raw materials and processed products of agricultural origin.

Agriculture in Bangladesh is basically subsistence-oriented having heavy population pressure on land with deteriorating land-man ratio. Starting with a poor industrial base the pace of urbanisation and industrialisation could not be sufficient to absorb the annual addition in population, thereby leading to greater concentration of population in the rural areas (Appendix I). The backward status of agriculture also failed to maintain an ever increasing agriculturally dependent population as growth in the production of foodgrains failed to match the rate of increase in population. As a result, per capita production and availability of food continued to fall with serious impact on nutritional status (Appendix II). In order to bridge the food gap Government had to import foodgrains heavily thereby straining her foreign exchange earnings. An assessment of the evaluation of agricultural development policies in Bangladesh has therefore to be made in the back-drop of these grim realities.

*The views expressed in this note are based on the author's own assessment of the problems. These may not necessarily represent the view points of the Government of Bangladesh.

Agricultural production is a highly complex phenomenon because of its dependence in various physical and natural factors most of which could hardly be controlled. The efforts in developing agriculture have accordingly to be directed towards tackling each of the complex factors influencing productivity. The institutional framework for agriculture has to be geared up to meet the diverse requirements of a developing agriculture. The basic contributing factors to low productivity in Bangladesh agriculture are the lower application of modern technology in the form of various improved production inputs and irrigation water, severe impact of the natural forces like flood and drought with resultant fluctuations in production and various imperfections in the production process like land tenancy, market mechanism, rural infrastructure, etc. Government has thus to step in to pave the way for greater availability of the requisite technology, remove the imperfections in the production system and provide a congenial agrarian structure so that production functions could take place at desirable pace.

With the attainment of Independence, Bangladesh inherited a war-shattered economy with breakdown in communications and transports and dislocation in various production process. With her own determined and sustained efforts to build a viable economy, and with liberal assistance from the various international agencies and friendly donor countries, Bangladesh made a rapid economic recovery and reached the pre-liberation production levels and in some cases exceeded that level within a few years of her national existence. The foremost task before the Government of Bangladesh was to identify the sectoral priorities for development and in this endeavour agriculture was accorded the priority that it deserves. This is reflected by increasing resource allocations for its development requirements (Appendix III). Its share is however yet to match its contribution to the G.D.P. The main target set for agriculture was to attain self-sufficiency in foodgrain requirements by the terminal year of the 1st Five Year Plan, *i.e.*, 1977-78. Emphasis has been laid not only on cereals but also on other protective foods, namely, pulses, oilseeds, fruits and vegetables with a view to ensure balanced availability of food for her growing population.

The First Five Year Plan aimed at providing a blue print for development of the national economy by clearly identifying and

enunciating policies, administrative and other measures needed for attaining the plan objectives, which were basically to reduce poverty, create employment opportunities, accelerate growth of GDP, transform technological and institutional base of agriculture for attaining self-sufficiency in foodgrains and check the population growth. In order to give effect to the Plan objectives, Development Plans are prepared annually by the Planning Commission by incorporating development requirements of various agencies and ministries in conformity with the resource availability and relative priorities for various sectors to ensure a balanced growth of the economy.

The major policies followed by the Government in the development of agriculture pertain to the harnessing of water resources for irrigation, controlling flood and population, make available various production inputs, rendering technical advice to the farmers for improving their managerial capabilities, provision of adequate agricultural credit, improvement of marketing facilities, maintenance of floor prices for major commodities and the like. As agricultural production in Bangladesh primarily depends on nature. Floods and drought play havoc almost every year, thereby giving rise to instability in production. Efforts have thus been concentrated on controlling flood and developing water sources for irrigation, specially in the winter season. The diversion of the Ganges water at Farakka, which is causing serious impact on agricultural production in the eight districts of Bangladesh, is now awaiting an immediate solution.

Government has accorded topmost priority to population control programmes and accordingly, various effective measures have been adopted to control population. The agricultural extension services with their wide networks, are being utilised for spreading the gospel of population education among the farmers.

Subsidy on agricultural inputs has formed one of the important policy planks. Subsidy is presently borne on fertilisers, mechanised irrigation devices like deep tubewells, shallow tubewells, and power pumps, mechanical cultivation appliances, sprayers, and pesticides and some improved seeds. Continuation of subsidy largely contributed to the greater use of these modern inputs as reflected by their increasing consumption and use (Appendix IV). However, in some cases subsidy proved

to be somewhat counter-productive in that they led to less than optimal use of these resources and in some cases wastage. Government policy is, therefore, to gradually withdraw subsidy. However, in view of the preponderance of small and below-subsistence farmers the maintenance of subsidy at varying levels would be necessary in raising farm productivity. Besides, these small farms could hardly be expected to finance any large scale adoption of capital intensive modern technology. Hence the public sector had to step in a big way to introduce such technology allowing the beneficiary farmers to make use of such facilities at subsidised cost.

Government has also been trying to develop indigenous intermediate type technology. For this, an Appropriate Technology Cell has been established under the Bangladesh Agriculture Research Council of the Ministry of Agriculture.

Government has also been assisting the farmers in getting fair prices of the produces in respect of major crops. Support on floor prices are operated for rice, wheat, jute and sugarcane. Liberal agricultural credit facilities are made available through Government-sponsored credit institutions like Bangladesh Krishi Bank, Cooperative like IRDP, Jatiya Shamabay Bank and their affiliate Societies and the nationalised Commercial Banks. Government is also advancing Taccavi loans for production purposes, but its importance is gradually diminished in view of the inherent weakness in the system (Appendix IV). The Rural Credit Advisory Committee set up under the Bangladesh Bank, the Central Bank of the country, has been entrusted with the responsibility of rendering effective coordination and guidance to the entire agricultural credit system.

Bangladesh agriculture is dominated by small peasant-proprietors (Appendix VI). The E. B. State Acquisition and Tenancy Act of 1950 and subsequent amendment thereof had done away with the feudal system of land tenure by abolishing the Jamindari system. All intermediary interests on land were also abolished. Though sub-letting has been prohibited, the share tenancy (share-cropping) is practised widely and it accounts for nearly 1/5th of the total cultivated area. Its incidence seems to be on rise. While the small farmers could not adopt modern technology to the desired extent for obvious reasons, the so-called big farms did also hardly show any

entrepreneurship in technological innovations. This was because they were part of the rural gentry who abhorred agricultural works and took resort to share-cropping. A rational land reform has become a necessity for lowering the existing ceiling on land holdings. The institution of share-cropping also needs to be rationalised.

However, as a cumulative effect of various development activities with institutional and organisational improvements brought about by the Government from time to time, productivity of major crops has started increasing significantly in the recent years as will be evident from the trend of production and growth rates of major crops (Appendix VII).

It is an extremely hazardous and difficult task to plan for the millions of small producers, who continue their farm activities on individual choices and preferences. Government's role is, therefore, concentrated on devising basic policy issues to influence decisions of the farmers towards innovating their farm operations, improve the supply and services of the needed inputs and provide a congenial agrarian structure.

Planning for agriculture cannot be done in isolation. Since a nation has to walk on two legs, namely, agriculture and industry both should progress at an equal pace. The conflicting demand by various sectors of economy on the national exchequer must be met rationally keeping in view their complementary relationship. For speedy technological innovations in agriculture supplies must come from the country's own growing industries. Good transport and communication systems are also a must for developing proper marketing facilities.

For undertaking sophisticated planning exercise to ensure development of a balanced economy, accurate and up-to-date data are badly needed by the planners, which are hardly available at present. Efforts are, however, continued to bring about quantitative and qualitative improvements in data collection system. In respect of crop production, objective method of data collection is gradually replacing the subjective method of crop estimation. Data on various aspects of crop production, land utilisation, etc., are collected by the Agriculture Division of the Bureau of Statistics, which are issued regularly. Data on farm structure and various aspects of farm activities are also being provided once in a decade through Agricultural Census

Organisation. Various agricultural development agencies have their own research and planning cells for undertaking policy-oriented studies which are made use of for planning purposes.

The functioning and achievements of each of the major agencies working in agriculture are being evaluated continuously by the agencies themselves and also by the evaluating bodies in the ministries and also by the Central Planning Body. Frequently, special evaluation studies are made by the Ministry of Agriculture and Planning Commission by drawing experts from different agencies.

The principal agency responsible for supply and services of various production inputs and mechanical irrigation and cultivation appliances is the Bangladesh Agricultural Development Corporation (BADC) under the Ministry of Agriculture. There is also a wide network of agricultural extension services, but in view of the poor availability of research results and inadequate supply of modern technology to be backed by farmers effective purchasing capacity, the effectiveness of the extension services could hardly be realised fully. However, with gradual improvement in the supply and services of modern inputs and agricultural research, the agricultural extension services have started yielding appreciable results

One serious limitation in implementing agricultural development programmes is the multiplicity of agencies dealing with various factors of agriculture under different ministries. In the interest of planned development efforts there should be greater and effective coordination among these agencies and multiplicity of organisation should be avoided as far as practicable.

Though Bangladesh agriculture is characterised by the predominance of the small farmers, this group has not succeeded in deriving the proportionate share of the benefits of modern technology. Accordingly, increasing emphasis has been laid on meeting the special development requirements of the small farmers on a priority basis. Agricultural lending agencies have been directed to give priority to the credit requirements of the small farmers. The traditional cooperatives, which were being dominated by the big farmers because of their social, economic and political status, are being reorganised so as to give upper hand to the small farmers in the management of such cooperatives. Experiments are also being carried out in developing

appropriate organisation and supply and services mechanism, particularly for the benefits of the small farmers and landless share-croppers. The Ministry of Agriculture is also making endeavour to organise informal groups of small farmers and share-croppers so as to facilitate supply and services of their inputs and other requirements exclusively.

Government has also taken intensive area development projects in a number of areas of the country under IRDP. This is in fact a complete rural development approach with a number of sub-sectors forming complementary part of the development complex. World Bank, Asian Development Bank and number of donor countries have started financing such regional development projects.

In conclusion, it may be stated that planning for agricultural development has been initiated in right earnest in Bangladesh. Development of agriculture however poses problems of gigantic proportion which can hardly be tackled by Bangladesh alone with her meagre resources. Liberal assistance from the friendly countries and international organisations would be required for a few more years till a self-sustaining economic base is established.

Appendix 1
POPULATION GROWTH IN BANGLADESH

Year	(No. in millions)					
	Total Population	Increase over previous decade	Rural Population	Increase over previous decade	Percentage of total	Urban
					Percentage of Total	Increase over previous decade
1901	28.93	—	28.23	—	97.57	0.70
1911	31.62	2.62	30.75	2.51	97.44	0.81
1921	33.25	1.70	32.37	1.63	97.36	0.88
1931	35.60	2.35	34.52	2.15	96.98	1.08
1941	41.79	6.39	40.46	5.94	46.34	1.53
1951	41.93	-0.06	40.11	-0.35	95.66	1.82
1961	50.84	8.91	48.20	8.09	94.81	2.64
1974	71.47	20.63	65.20	17.00	91.22	6.27
						3.63
						8.78

Appendix II

Year	Total foodgrain production (in '000 tons)	Seed wastage @10% (in '000 tons)	Net production (in '000 tons)	Import during the year (in '000 tons)	± Stock (in '000 tons)	Net availability of production (in '000 tons)	Population (in '000)	Per caput availability of production (in Lbs.)	Per caput net food production (in Lbs.)
1969-70	11,941	1,194	10,747	1,546	-30	12,263	63,160	428	375
1970-71	11,106	1,111	9,995	1,520	+119.0	11,634	64,896	395	339
1971-72	9,911	991	8,920	1,802	-188	10,534	66,680	348	295
1972-73	10,139	1,014	9,125	2,808	-140	11,793	68,514	379	293
1973-74	11,847	1,185	10,662	1,652	-62	12,252	70,398	383	334
1974-75	11,242	1,124	10,118	2,253	-81	12,290	72,333	371	308
1975-76	12,702	1,270	11,432	1,459	+632	13,523	74,322	401	339

Appendix III

SECTORWISE ALLOCATION IN THE ANNUAL DEVELOPMENT PLANS

(Amount in million taka)

Sectors	1973-74		1974-75		1975-76		1976-77	
	Amount	per cent	Amount	per cent	Amount	per cent	Amount	per cent
1. Agriculture & Rural Institution	900.0	17.2	885.0	16.9	1,681.1	17.7	2,124.7	17.4
2. Water Development & Flood Control	700.0	13.0	800.0	15.3	1,340.6	14.2	1,500.2	12.3
3. Industries, Power, Natural Resources and scientific Technology	1,426.5	27.3	1,425.0	27.3	2,677.7	28.2	4,346.7	35.6
4. Transport and communications	1,042.1	20.2	970.0	18.6	1,796.3	19.0	2,064.8	16.9
5. Education, Housing, Health, Social Welfare & Labour	1,044.9	19.7	1,000.0	19.2	1,719.0	18.3	2,043.5	16.7
6. Miscellaneous	140.0	2.6	140.0	2.7	225.0	2.6	140.0	1.1
Total	5,253.5	100.0	5,220.0	100.0	9,469.7	100.0	12,219.9	100.0

Appendix IV
DISTRIBUTION OF FERTILIZERS BY BADC

<i>Type</i>	<i>1971-72</i>	<i>1972-73</i>	<i>1973-74</i>	<i>1974-75</i>	<i>1975-76</i>
Urea	170	276	267	176	312
T.S.P.	60	89	94	76	110
M.P.	14	18	18	17	22
Total	244	383	379	269*	444*

*In addition about 13,000 tons of other fertilizers were distributed.

COMMISSIONING OF IRRIGATION APPLIANCES BY BADC

<i>Item</i>	<i>As on 30.6.72</i>	<i>As on 30.6.73</i>	<i>As on 30.6.74</i>	<i>As on 30.6.75</i>	<i>As on 30.6.76</i>
I. Shallow Tubewell :					
Number Commissioned	655	2,478	3,248	3,929	5,068
Area irrigated	6,550	24,780	32,480	34,290	50,680
II. Deep Tubewell :					
Number Commissioned	—	1,424	1,651	3,324	5,009
Area irrigated	—	25,425	61,000	117,864	150,747
III. Power Pump :					
Number Commissioned	24,254	32,924	35,343	35,576	36,379
Area irrigated	864,427	1,230,468	1,330,810	1,800,508	1,330,380

Appendix V
SUPPLY OF AGRICULTURAL CREDIT BY DIFFERENT INSTITUTIONAL LENDING AGENCIES
(in million taka)

<i>Agencies</i>	<i>1971-72</i>	<i>1972-73</i>	<i>1973-74</i>	<i>1974-75</i>	<i>1975-76</i>
1. Bangladesh Krishi Bank	96.4	179.0	135.7	176.2	183.6
2. Jatiya Samabay Bank	—	131.9	78.0	87.3	107.3
3. IRDP	11.2	20.6	24.5	39.3	45.3
4. Commercial Bank		—Negligible—	70.6	77.5	256.2
5. Taccavi	100.0	60.0	14.6	10.0	6.5

Appendix VI
DISTRIBUTION OF FARMS IN BANGLADESH AS PER SIZES

Size of Farms (in acres)	Farms		Farm Area	
	Number in '000	Percentage	Total area '000 acres	Percentage
Below 1.5	2,588	37.68	2,016	9.36
From 1.5 to below 2.5	1,302	18.97	2,581	11.97
From 2.5 to below 5.0	1,807	26.31	6,462	29.97
From 5.0 to below 7.5	632	9.20	3,831	17.77
From 7.5 to below 12.5	360	5.24	3,347	15.52
From 12.5 to below 25.0	149	2.17	2,362	10.95
From 25.0 to below 40.0	2	0.36	712	3.30
From 40.0 and above	5	0.07	251	1.17
Total	6,868	100.00	21,562	100.00

SOURCE : *Master Survey of Agriculture, 1967-68.*

Appendix VII
PRODUCTION TREND OF MAJOR CROPS
(in thousand tons unless otherwise stated)

Crops	Average 1947-48 to 1949-50	Average 1950-51 to 1954-55	Average 1955-56 to 1959-60	Average 1960-61 to 1964-65	Average 1965-66 to 1969-70	1971-72	1972-73	1973-74	1974-75	1975-76
Rice	7,262	7,509	7,414	9,702	10,747	9,774	9,930	11,721	11,109	12,575
Wheat	21	23	24	37	69	113	89	109	115	215
Sugarcane	3,260	3,620	3,819	4,397	7,683	5,584	5,318	6,342	6,635	
Tea (million lbs.)	33.8	48.5	52.4	54.2	63.4	26.4	53.0	61.0	71.3	
Tobacco	98.0	107.0	82.2	62.7	81.1	76.5	88.4	91.7	89.0	
(million lbs.)										
Rape & Mustard	82.0	99.0	90.0	97.0	114.0	112.0	106.0	98.0	114.0	

GROWTH RATES		
	Pre-liberation period	Post-liberation period
Rice	2.18	6.82
Wheat	7.6	28.7
Sugarcane	4.0	5.8
Tea	3.6	15.0
Tobacco	0.4	3.4
Rape & Mustard	1.84	4.7

Waliul Islam Khan

Agricultural Development Strategies in Bangladesh—Review and Future Policies

I. INTRODUCTION

The economy of Bangladesh is predominantly agricultural. About 90 per cent of population live in rural area and over 75 per cent are engaged in agriculture. Agriculture provides 57 per cent of GDP, 90 per cent of foreign exchange earning and 76 per cent of total employment. Approximately 40 per cent of GDP is derived from major crops and 28 per cent from rice alone.

Agricultural Land, Farm Size and Land Tenure

Total agricultural land in Bangladesh is about 22.5 million acres with a cropped area of about 33 million acres. Cropping intensity is 146 per cent. There is hardly any scope for expansion of land areas as almost all cultivable land is under plough.

The average farm size in Bangladesh was estimated to be 3.2 acres in 1973 as against 3.5 acres in 1960. As per recent estimate of the World Bank, the cultivated acres per family in 1975 is about 2.5 as against 3.1 acres in 1961 (Agriculture Census) and 2.9 in 1967 (Master Survey of Agriculture). There are about 10 million farms in 1975 as against 6.8 millions in 1961.

According to Master Survey of Agriculture, 61 per cent are owner operated and 37 per cent are owner-cum-tenant farms. About 83 per cent of farm area is operated by owner themselves. seventeen per cent is cultivated by tenants on share-crop basis,

About 92 per cent of the farms are below 7.5 acres and cover about 70 per cent of total farm area.

Major Crops

Paddy covers about 80 per cent of the total cropped area. Other crops are jute, sugarcane, wheat, pulses, oilseeds, etc. The acreage under jute drastically declined in the recent years from about 2.2 million acres to about 1.4 million acres because of unfavourable jute price relative to rice. Production of important crops during the last few years are shown below :

<i>Crops</i>	<i>Unit</i>	<i>Years</i>			
		1972-73	1973-74	1974-75	1975-76
Rice	Lakh tons	99.30	117.21	111.09	125.75
Wheat	„ „	0.90	1.09	1.15	2.18
Sugarcane	„ „	53.18	63.42	66.35	58.86
Jute	Lakh bales	65.14	60.00	39.00	443.00
Tea	Million pounds	53.06	60.00	70.92	66.20

Importance of paddy in the cropping pattern will continue to characterise Bangladesh agriculture to meet the food requirement of her growing population. Production trend of paddy has not been satisfactory. In 1973-74, domestic production reached almost the level of 1969-70. But in 1974-75, production was adversely affected by the severe flood and the country faced almost a famine situation.

Problem Setting

Annual population growth rate being around 3 per cent high rate of un/under-employment (35 per cent), predominance of small sized farms (92 per cent of farms are below 7.5 acres), low land-man ration (per capita agricultural land—0.4 acres) and low yield per acre, it is quite likely that for decades agriculture will have to provide food and employment to the population.

The rate of growth in agriculture, particularly in crop sector is, therefore, of crucial importance. The problem is not merely to increase agricultural production but to increase it faster than population growth. Though the control of population growth is an immediate economic and social imperative, it is unlikely that anything significant in this regard will be possible shortly. The primary concern is, therefore, to attain self-sufficiency in foodgrain production as early as possible.

Increase in the production of other crops is also important to meet the nutritional requirement, increasing demand for industrial raw materials to generate employment. Hence highest priority has been attached to crop production.

Objectives and Strategies

Keeping in view the long-term objectives to increase agricultural income through increased production to create employment opportunities, to reduce rural poverty, etc., specific short-term objectives of agricultural programmes are :

- (i) to attain self-sufficiency in foodgrain at the earliest possible time;
- (ii) increased production of export oriented or import substituting crops; and
- (iii) to create employment opportunities for the rural un/under-employed.

The main strategies for increased crop production are as follows :

1. Concentration of seed-based technology in certain areas.

Areas of concentration distributed all over the country together with normal 'diffusion effect' will promote sharing of benefits from the improved technology by a vast section of the rural population. Due to limited scope for area expansion, major thrust has been on increasing yield and cropping intensity with the following technologies :

- (i) Introduction of high yielding varieties (HYV).
- (ii) Flood control and expansion of irrigation facility.
- (iii) Use of chemical fertilizers.
- (iv) Control of pests and diseases.
- (v) Improved methods of cultivation.

2. Low-cost labour intensive techniques are preferred to capital intensive techniques,

3. Development of appropriate programmes for rural institutions, agricultural extension and credit. Small farmers, tenants, share-croppers and agricultural workers are to be drawn into rural cooperatives.

4. Gradual withdrawal of subsidy on all agricultural inputs.

5. Expansion of activities under "Rural Works Programme" and "Food for Work" to create employment opportunities in the off season and build rural infrastructures.

6. Strengthening the research organisations for undertaking problem oriented research.

High yielding varieties (HYV) were proposed to be grown under both rainfed and irrigated condition, the emphasis in the initial stage has been placed on rainfed HYV and gradually shifted to irrigated HYV.

In the irrigation sector, the strategy is on development of low cost, labour intensive and quick yielding irrigation programmes.

About 30 per cent of the total public sector investment to be allocated to agriculture.

With this background information, current status and review of some major programmes are stated in section II.

II. REVIEW OF MAJOR PROGRAMMES

Irrigation

Irrigation programme includes low lift pumps (LLP), deep tubewells (DTW) and shallow tubewells (STW). DTW programme has been curtailed because of its high cost, sophistication and resource constraint. LLP is the most important public sector irrigation programme in the country. A total area of 1.7 million acres were irrigated under all public sector programmes in 1975-76 with LLP irrigation of 1.40 million acres (82 per cent).

One of the most crucial problem of LLP is under-utilization of the pumps. During last few years, coverage per 2-cusec pump is between 35-40 acres as against 50-60 acres during 1964-67. Some estimates show that capacity utilization of pumps and tubewells in public sector is only 45 per cent.

Fertilizer

Fertilizer, a key input for increasing production, is sold to farmers at a subsidised rate of about 50 per cent. Per acre use of fertilizer is between 25-28 pounds. Balanced and recommended dozes are not applied. Off-take of different fertilizers are shown below :

(in lakh tons)

<i>Year</i>	<i>Urea</i>	<i>TSP</i>	<i>MP</i>	<i>Total</i>
1973-74	1.70	0.84	.16	3.70
1974-75	1.76	0.76	.18	2.70
1975-76	3.14	1.16	0.23	4.53
1976-77 (Programme)	3.62	1.38	0.25	5.25

HYV Area

The extent of HYV area in the total paddy and wheat areas is shown below :

(in lakh acres)

<i>Crop</i>	<i>1974-75</i>			<i>1975-76</i>		
	<i>Total area</i>	<i>HYV area</i>	<i>HYV%</i>	<i>Total area</i>	<i>HYV area</i>	<i>HYV%</i>
Aus	78.57	7.00	9	84.52	8.72	10
Aman	134.69	12.40	99	142.36	13.76	9.6
Boro	28.71	16.30	57	28.00	15.00	53.7
Wheat	3.12	0.82	28	3.90	2.40	67
Total	245.09	36.52	15	258.78	39.88	15

HYV area under paddy increased by about 2 lakh acres. The main problem of expansion is related to complementary inputs particularly fertilizers, irrigation, credit and extension.

Distribution of Improved Seeds

HYV seeds are both imported and locally procured after

multiplication in government farms and growers' plot. In 1975-1976 about 0.50 lakh maunds of HYV paddy seeds (1.15 lakh maunds in 1974-75); 1.20 lakh maunds wheat seeds (0.25 lakh maunds in 1974-75) and 1.21 lakh maunds of potato seeds (1.13 lakh maunds in 1974-75) were distributed at subsidised rates. The seed programme is related with the area to be covered under new varieties and replacement of the existing varieties.

Pesticides

The use of pesticides was not satisfactory. Only about 3000 tons with a spray acreage of 21 lakh acres were used in 1975-76 as against the target of 5,000 tons. Low-off take is partly due to imposition of price and good weather.

Agricultural credit

Performance of agricultural credit disbursement was quite satisfactory in 1975-76. Induction of commercial banks in the field of agriculture credit has produced good result.

Rural Institutions

Major programmes under Rural Institution are Farmers' Cooperatives, Integrated Rural Development Programme (IRDP) and Rural Works Programme. The performance of the Cooperatives has not been very satisfactory. Average membership per village cooperative has remained as low as 30. one hundred and sixty two Thana Central Cooperative Associations (TCCA) under IRDP have been formed up to 1975-76. Power structure influence in the cooperative groups has continued to remain.

Agricultural Extension

Ministry of Agriculture and the agencies under its control perform the general extension service. Water Development Board under the Ministry of Flood Control provides irrigation extension service. Ministry of Industries has separate extension staff for sugarcane production in the sugar mill areas. There are other monocrop extension service also. Though the Agriculture Ministry controls relatively high preparation of extension service but each programme of extension is in fact independent, which calls for effective coordination at the thana level. However, during

1975-76 general extension service has been strengthened and reorganised.

Agricultural Research

In order to streamline in overall agricultural research programmes and effective coordination amongst the various mono-crop research Institutes like Jute Research Institute, Rice Research Institute, Agricultural Research Institute, an Agricultural Research Council (ARC) as an apex organisation established in 1973 has been suitably strengthened and reorganised. With the assistance of different and giving agencies various research programmes have been undertaken. The emphasis has been on applied research for increasing agricultural production through varietal improvement, better land and water management, agro-nomic practices and pest and disease control.

An action research programme on problem of small farmers and landless labourers has been undertaken in later part of 1975-76 with FAO assistance.

III. INDICATION OF MAJOR POLICY ISSUES

The extent of dependence on foreign assistance in our development programmes is quite high. The prospect of foreign assistance appears to be related with our ability to perform, the better we can manage the economic affairs, the brighter is the prospect. Effective implementation and better management of agricultural programme, are therefore, important for our economic development. However, momentum of development will largely depend on domestic resource mobilisation.

Irrigation

Expansion of HYV-area is dependent on expansion of irrigation coverage. Present operational efficiency of LLP/TWS appears to be a serious constraint for area expansion. Capacity utilisation of pumps should, therefore, be emphasised rather than increasing number. Other policies include :

- (i) Prompt repairing facilities including supply of spare parts should be ensured.
- (ii) BADC which is now responsible for supply and maintenance of pumps only should also be made responsible for increasing the efficiency.

- (iii) Greater emphasis should be given on shallow, hand tubewells, dug wells and bambo tubewells for their extensive use through private sector participation.

Fertiliser

Fertiliser policy should be to correct the imbalance through motivation and demonstration, differential price policy for different fertilisers and better training facilities to the farmers. Other policies include development of storage and distribution facilities. Private sector participation in the distribution of fertiliser should be encouraged.

Pesticides

The present functional dichotomy between the BADC and the Extension Department results in an uncoordinated programme of pesticides produrement and distribution. There is also lack of awareness with regard to the effective demand for pesticides in different regions of the country. Hence stock accumulation continues resulting wastage and loss of national resources. Effective demand has to be assessed before making any programme for pesticides import. Steps should be taken to train the farmers on pest control measures.

Improved Seeds

Seed programme has not yet proved to be very successful. Most of the locally procured seeds are of questionable quality in terms of both purity, germination rate and field performance. Seed policy should be consistent with the farmers' expectation and demand in the area. Timely availability, proven quality and a reasonable price of seed should be the policy guidelines for seed distribution programme. Though a Cereal Seed Project with IDA assistance has been launched last year, it will take some time to become effective.

Other Policies

The small farmers, tenants and landless labourers need to be drawn into cooperatives. Credit facilities may be extended to share-croppers and small farmers against crop-hypothecation or guarantee by the land owners. The credit organisations

would accept crops as payment of loans. Rural works programme and Food for Work would expand their activities in building infrastructures. This would increase employment opportunities and income. The cooperative institutions would involve in diversification of their activities.

Planning

For achieving the targets, a more realistic assessment of the rural condition is necessary and planning from bottom is a pre-requisite. Agricultural plan should be done from the grass root level, i.e. thana level. A decentralised planning approach has greater chance of achieving the targets than under a generalised plan. While micro-planning is advocated for greater realism, macro-planning will be needed for fixing national priorities and resource allocation. Planning and implementation capacity of the executing agencies at the field level need to be substantially improved. Development in a package-deal concept covering crops, fishery, livestock, family planning, health and sanitation should be taken up.

Management

The rural development, multiple ministries/agencies are involved and they have field organisations covering crops, input supply, cooperatives, etc. The activities in all these disciplines are so scattered and diffused that the supplies and services are not fully coordinated.

A major factor preventing effective coordination is the lack of specification of roles and responsibilities of different field organisations. In *crop extension*, a rationale may be made for a separate sugar extension service in the mill zones because of agency's vertically integrated activities of production support, marketing and processing. On the other hand, because of and the importance of providing crop extension on the basis of overall farm needs (cropping structure), field extension through the WDB, IRDP, Jute Directorate, BADC should be unified under Agricultural Extension and Management. This will help effective coordination for optimum utilisation of scarce resources input supplies and institutional services.

Modernisation of traditional agriculture having millions of

farmers is a difficult task. But to feed our people, we have no escape than to undertake a rational approach on crop development backed by population control and sound price-policy of input and outputs.

R.C. Sood

Country Note : India*

The activities of the Union Ministry of Agriculture and Irrigation in India have been oriented towards achievement of a rapid development of agriculture and amelioration of the lot of weaker sections of the agricultural community. A very high priority was accorded to agriculture in the programmes of development launched immediately after independence and in the successive Five Year Plans. As the following table shows, the public sector outlays for agriculture (including irrigation and flood control which directly benefit agriculture) have increased progressively in the successive plan periods.

PUBLIC SECTOR OUTLAY FOR AGRICULTURAL SECTOR

<i>(Rs. in million)</i>		
<i>Public Sector Outlay</i>	<i>Agri. (including irrigation & flood control)</i>	<i>Total all sectors</i>
1. First Plan (Actual)	7,240	19,600
2. Second Plan (Actual)	9,490	46,000
3. Third Plan (Actual)	17,540	85,730
4. Annual Plans 1966-67—1968-69 (Actual)	15,780	66,250
5. Fourth Plan (Anticipated)	34,660	167,740
6. Fifth Plan (outlay)	76,160	372,500

*The views expressed in this paper are personal and do not purport to represent the organisation in which the author is employed.

In addition, substantial investments have also been and are being made on various infrastructure facilities which support agricultural production. An important role has also been assigned to the institutional finance in the form of long and medium term loans through cooperatives, land development banks and commercial banks.

Up to 1960-61 increased production was secured largely through measures like extension of irrigation, reclamation of new land, use of improved cultural practices and plant protection measures and tenurial reforms. Thereafter, greater emphasis has been laid on intensive production efforts. To start with, this approach was reflected in the Intensive Agricultural District Programme (IADP) taken up in 1960-61 in 16 selected districts in various states. This programme implied package programme approach (*i.e.*, simultaneous attention to quality seeds, adequate doses of fertilisers and adoption of plant protection measure) in areas which were capable of giving quickest results in terms of increased production. In view of the encouraging results obtained, the package programme approach adopted in the IADP was extended in a somewhat modified form to about 84 more districts, commonly known as Intensive Agricultural Area Programme districts.

A new strategy for agricultural development was formulated and put into action from 1966-67. The new strategy emphasised the increasing application of science and technology to agriculture and included among its key elements, the cultivation of high-yielding varieties of seeds, soil and water management, multiple cropping, use of adequate quantities of fertilisers, plant protection measures and building up of necessary infrastructure like credit, marketing, farmers' training and research.

In the wake of the new strategy, agricultural production witnessed encouraging progress. Foodgrain production reached the peak level of an estimated 118.00 million tonnes in 1975-76 as compared to the highest level of 89.4 million tonnes attained in 1964-65, *i.e.*, the peak year before the adoption of the new strategy, and 72.3 million tonnes recorded in the drought year of 1965-66. In the case of wheat there was indeed a revolution inasmuch as its production doubled in a short span of five years.

A multi-pronged effort for achieving the requisite growth in

crop yields is being made during the Fifth Five Year Plan. The main elements in the effort are :

- (i) Intensification of problem-oriented research;
- (ii) Strengthening of agricultural extension and administration;
- (iii) Expansion of the programme of multiplication and distribution of certified seeds;
- (iv) Increase in the consumption of chemical fertilisers and improvement in the efficiency of fertiliser use;
- (v) Water management;
- (vi) Expansion in institutional credit;
- (vii) Development of post-harvest facilities including expansion in the role of cooperative agencies in the marketing of crops ;
- (viii) Substantial expansion of storage to support marketing infrastructure;
- (ix) Effective operation of an agricultural price policy which provides requisite incentive for sustained and higher production; and
- (x) Execution of land reforms measures.

The various development programmes that have helped build up this potential are discussed in the following paragraphs.

Irrigation

Water is the most vital input for agricultural development without which other inputs and efforts cannot yield the desired results. The Ministry of Agriculture & Irrigation has, therefore, all along given a very high priority to this sector in the plans for agricultural development. Achievement in this field during the last 25 years has been substantial. Irrigation potential which was 22.6 million hectares at the beginning of the planning era, had reached the level of 47.7 million hectares by the end of 1975-76. It works out to a growth rate of nearly 1 million hectares per annum, perhaps the largest for any country in the world. The irrigation potential from major and medium irrigation projects has increased from 9.7 million hectares in 1951 to about 22.5 million hectares. Out of 99 multipurpose major irrigation projects taken up about 30 have already been completed and another 20 are nearing completion. Significant progress has been achieved with regard to other projects also. Out

of 513 medium irrigation projects undertaken, over 400 have already been completed. Among the notable projects completed include Bhakra Nangal, Damodar Valley, Hirakud, Mayurkshi, Tungabhadra, etc.

For optimum utilisation of the irrigation potential created through major and medium irrigation projects, an integrated command area development programme in 51 selected irrigation commands spread over 16 states having a cultural command area of about 13 million hectares is being taken up. The programme varies in scope and content from project to project and State to state depending on the development that has already taken place and other relevant factors. Broadly speaking, the programme covers on-farm development works comprising field channels, field drains, land levelling and land shaping operations, surveys, designs and preparation of plans for these works and supervision of execution thereof; strengthening of existing extension, training and demonstration organisations, provision of adequate main and intermediate drainage, modernisation and improvement of the existing irrigation system, etc. An appropriate type of a project authority has been/is being set up in each of the command areas.

High-Yielding Varieties

Special efforts have been made in the successive five year plans to improve the quality of seeds and to evolve and introduce the high yielders. In 1975-76 high-yielding varieties were grown over an area of more than 32 million hectares. The coverage under wheat has been as much as 62 per cent of total area under the crop. In the case of rice, the varieties evolved so far have been found to be suitable in primarily non-traditional areas where rainfall is moderate, irrigation facilities are available and hence, proper management of water is possible. Also, these varieties have shown significant results in irrigated areas in the summer season. As regards coarse grains, hybrid bajra has done generally well. However, the progress under hybrid maize and jowar has been slow due to non-availability of varieties that could fit into the prevailing cropping pattern and the susceptibility of the available varieties to pests and diseases. In view of these problems, a number of new strains of high-yielding varieties of foodgrains have recently been evolved and to ensure their rapid

trial on farmers' fields, a minikit programme has been undertaken.

Fertilisers

Use of fertilisers is widely regarded as an index of adoption of modern technology in agriculture. In India, the quantity of chemical fertilisers used in 1950-51 was less than 0.1 million tonnes of nutrients. Consistent efforts to encourage fertiliser use through trials, demonstrations and propaganda led to a steady rise in fertiliser consumption to the level of about 0.8 million tonnes by 1965-66. Thereafter, with the introduction of the high-yielding varieties, fertiliser consumption showed a rapid increase, reaching the level of about 29 million tonnes of nutrients in 1975-76. The achievement could have been much more but for its restricted availability and soaring prices in the international market. Despite several-fold increase in the prices of fertilisers and shortage of foreign exchange resources, steps have been taken to maintain the supplies through increased imports of fertilisers.

Research and Extension

The main thrust of research is on changing the plant types and evolving dwarf still-strawed, non-lodging, fertiliser responsive, high yielding crop varieties. A wide range of crop germ plasm has been assembled through scientific plant introduction. Dwarf varieties of wheat like Sonalika, Sharbati Sonara, Chote Lerma and Safed Lerma, which were evolved and released in the middle and late sixties have resulted in a near revolution in the production of wheat. An ambitious breeding programme has been organised in all parts of the country. A number of new varieties, some of which are reported to have yielded 70 quintals per hectare with a maturity of 5 months, have been released. Similarly, for rice, after the success of IR-⁸, TN-1 etc., a number of new high yielding varieties such as Jaya, Vijaya, Ratna, Padma, Pankaj and Bala, etc., have been released. These dwarf varieties are significantly superior to all types in their response to fertilisers and have given significantly higher yields under most levels of management.

Research efforts to evolve suitable high yielders and hybrids for coarse grains has also been under way. Five different strains

of hybrid bajra have been released which have a yield potential of about 40 quintals per hectare. Unfortunately, their positive trend of production has not been sustained due to their susceptibility of mildew and argot. Recently two new hybrid (PBH-10 and PBH-14) have been released which are expected to impart stability to production. In addition, the old HB-3, HB-4 and HB-5 hybrids have been reconstituted using resistant parent lines. The progress under maize and jowar has been relatively slow mainly due to susceptibility of available high yielders to pests and diseases, and lack of suitable varieties for different agro-climatic zones. Amongst commercial crops, a major breakthrough has been achieved in the case of cotton with the evolution and introduction of high yielding varieties such as Hybrid-4, MCU-5, Varalaxmi, etc. More important still is the fact that these varieties are not only high yielding but also long staple ones.

As major breakthrough in agriculture cannot be sustained without a strong research base, number of agricultural universities has been set up to fully integrate research and extension with education. At present all the major states have such universities.

Agricultural Prices

Price policy has an important role to play in the matter of inducing farmers to raise production and, in that context, to adopt modern agricultural practices. Unless farmers are satisfied that their efforts to increase agricultural production will not result in fall of prices of their produce to uneconomic levels, they would not expand production and towards that end, adopt the modern technology. This being so, the Government has, for a number of years, been fixing minimum support procurement prices for various agricultural commodities. The Agricultural Prices Commission was set up in January, 1965 to advise the government, on a continuing basis on price policy for different crops, with a view to evolving a balanced and integrated price structure in the perspective of the overall needs of the economy and with due regard to the interests of producers and consumers.

Land Reforms

Under the successive Five-Year Plans, considerable emphasis has been laid on land reforms. The objective of land policy have been the removal of such motivational and other impediments in increasing agricultural production as arise from the agrarian structure inherited from the past and the elimination of all elements of exploitation and social injustice within the agrarian system so as to ensure equality of status and opportunity to all sections of the rural population. These objectives are sought to be achieved through specific programmes for the abolition of all intermediary interests between the state and the tiller of the soil, regulation of rent, provision of security of tenure for tenants with a view ultimately to conferring ownership rights on them, imposition of ceiling on agricultural holdings, distribution of surplus land among the landless and the small holders, and consolidation of holdings.

The intermediary tenancies such as Zamindari, Jagirdari and Inams which at the time of Independence in 1947 prevailed in about 40 percent of the area, have been practically abolished all over the country. As a result of this, about 20 million tenants have been brought into direct relationship with the state. Also large areas of privately owned forest land, grazing land and culturable waste land have come to be vested in the state.

Imposition of ceilings on agricultural holdings has been considered to be an important instrument to do away with the extreme concentration in land ownership. For this purpose, legislation on land ceiling was enacted almost all over the country in the mid-50's. In the last 3-4 years, the national policy on land ceiling has been redefined, considerably lowering the ceiling, making it generally applicable to a family.

In India, most of the agricultural holdings are not only small but also widely scattered. Consolidation of holdings, is therefore, a necessary precondition to the rationalisation of agricultural operations in the country. In most of the states, legislation for consolidation of holdings, either compulsorily or voluntarily, has been enacted.

Rural Development

To enable the rural population to participate in and share the benefits of economic growth, a number of special pro-

grammes have been taken up. On October 2, 1952, the Community Development Programme was launched. The entire country is now covered under Community Development Blocks numbering 5092; each block consists of about 100 villages and covers an area of nearly 150 sq. miles. During the Third Five Year Plan, Panchayati Raj was introduced so as to enable each area to realise its maximum development potential on the basis of local manpower and other resources, cooperative self-help and community effort, and effective use of the available resources and personnel.

Since growth with social justice is one of the important objectives of planned development, special emphasis has been laid on the programme for the upliftment of the weaker sections of the rural population, particularly the small and marginal farmers and agricultural labourers. For this purpose, programmes such as Small Farmers Development Agency (SFDA), Marginal Farmers and Agricultural Labourers (MPAL) and Drought Prone Areas have been launched. The main functions of SFDA/MPAL agencies are to identify the participants, study their problems, draw up suitable programmes, locate institutional support, arrange extension service and inputs, and provide supervision for the adoption and implementation of these programmes. The Drought Prone Area Programme aims at integrated agricultural development in selected drought prone areas through proper development and management of water resources, soil and moisture survey, afforestation, restructuring of cropping pattern, livestock development, etc.

A special programme for the development of selected tribal areas in addition to 504 tribal development blocks already set up under the Community Development Programme, has also been initiated. Eight projects are now in operation in the states of Andhra Pradesh, Bihar, Madhya Pradesh and Orissa.

Agricultural Credit

The policy in the field of agricultural credit is of progressive institutionalisation under a 'multi-agency approach'. A number of measures have been taken for increasing the flow of agricultural credit from various agencies. Cooperative continue to be the main institutional source for provision of agricultural credit. The short and medium term loans advanced by primary

agricultural credit societies are likely to have gone up from Rs. 229 million in 1950-51 to more than Rs. 10,190 million in 1975-76. The quantum of long-term loans advanced by cooperative land development banks which was only Rs. 137 million in 1950-51, is estimated to have reached a level of Rs. 2,464 million in 1975-76. The commercial banks are also increasingly meeting the requirements of agriculture. The direct finance (outstandings) extended by commercial banks at the end of June, 1969 was only Rs. 402 million had gone up to Rs. 4,382 million by June 1974.

It would thus be seen that as a result, among other things, of multifarious activities undertaken by the Government of India generally and Ministry of Agriculture and Irrigation in particular, agricultural production has nearly doubled during the last 25 years. The production base has also been substantially widened. Greater efforts to raise per hectare yield of land per unit of time have been undertaken through a programme of multiple cropping. Science and technology are being increasingly harnessed for augmenting agricultural productivity and production. Problem oriented multi-disciplinary research efforts have been launched on a big scale. During the last few years a new effort has been launched for bringing about reorientation in cropping pattern so as to increase irrigation based production during the rabi summer season *vis-a-vis* kharif production which is based on uncertain and erratic rains. Low rainfall areas including semi-arid and arid lands have become the focus of attention of the Ministry. Remunerative prices are being provided to the producers and efforts have been made from time to time to remedy the imperfections in the marketing structure for various crops. Food management policies have also been attuned for dealing with the varying situations whether arising out of food shortages or over production. All these developments should be of far-reaching significance to the agricultural development of the country.

H.M. Rumahorbo & Natigor Siagian

Short Description of the Status of Agricultural Policies and their Implementation in Indonesia

BACKGROUND

The agricultural census of 1963 showed that Indonesia had 14.5 million HA of agricultural land, out of which 1.6 million HA is cultivated by 1100 units of estates and 12.9 million HA by 12.2 million farmers. The average size per unit for the whole of Indonesia is 1.1 HA for farmers and 1.420 HA for estates. Smallholders cultivated an average of 1.8 HA of rubber 0.3 HA of coconut plantation, and 0.3 HA of coffee (see table 1).

As for the farmers' land ownership 43.6 per cent farmers have less than 0.5 HA of agricultural land and only 0.3 per cent farmers have more than 15.0 HA. The number of farmers who have less than 0.5 HA agricultural land in 1973 increased to 45.6 per cent (see table 2).

The most important crops cultivated by farmers are food-crops and estate crops. The main foodcrops are rice, maize, cassava, sweet potatoes, vegetable and fruits, whereas the main plantation crops are rubber, coffee, palm oil, copra and sugarcane.

The total production of each commodity in 1975 amounted to : 15.3 million tons of rice, 2.9 million tons of maize, 12.9 million tons of cassava, 3.1 million tons of sweet potatoes, 89 million tons of rubber, 0.17 million tons of coffee, 0.33 million tons of palm oil, 1.29 million tons of copra, and 1.53 million tons of sugarcane (see table 3).

NATIONAL DEVELOPMENT AND AGRICULTURAL POLICY

The REPELITA II* explains the general plan for the national development as follows :

- (a) Self-sufficiency in food, price stability of rice, benefits for the producers, availability to the consumers and finally improved food protein value.
- (b) Improve the economic ability of the agricultural producer sector.
- (c) Increase the amount and use of foreign exchange earnings.
- (d) Utilisation of natural resources and the conservation of the potential.
- (e) Expansion of work activities.

TABLE 1
AGRICULTURAL STRUCTURE DATA BASED UPON
AGRICULTURAL CENSUS IN INDONESIA IN 1963

<i>Remarks</i>	<i>Small holder</i>	<i>Estates</i>	<i>Total</i>
1. Total unit of farmers exertion (thousand)	12,236.5	1.1	12,237.6
2. Size of land (thousand AH)	12,000	1,600	14,500
3. Average size per unit (HA)			
(a) Indonesia	1.1	1,420.—	—
(b) Java & Madura	0.7	823	—
(c) Sumatra	1.8	2,925.	—
(d) Kalimantan	2.6	1,180.—	—
(e) Sulawesi	1.1	199.—	—

SOURCE : Agricultural census of 1963, C.B.S.

From REPELITA I up to the IVth Repelita most development activities are still emphasising the agricultural sector. The agricultural sector is expected to built a strong base for development and to strengthen the economic structure which will lean to industrial activities supported by the agricultural sector.

*REPELITA—Five Year National Development Plan.

TABLE 2
NUMBER OF FARMS BY SIZE OF HOLDING, 1963-1973

<i>Size of Holding (HA)</i>	<i>1963</i>		<i>1973</i>		<i>Index 1963=100</i>
	<i>Number of Farms</i>	<i>%</i>	<i>Number of Farms</i>	<i>%</i>	
0.50	5,331,872	43.6	6,560,758	45.6	123
0.50— 0.75	2,071,064	16.9	2,276,520	15.8	110
0.75— 1.00	1,173,820	9.6	1,277,777	8.9	109
1.00— 2.00	2,222,941	18.2	2,597,636	18.1	117
2.00— 3.00	693,479	5.7	852,757	5.9	123
3.00— 5.00	430,668	3.5	500,726	3.5	116
5.00—10.00	222,095	1.8	223,604	1.6	101
10.00—15.00	51,390	0.4	47,229	0.3	91
15.00	39,141	0.3	16,535	0.2	93
	12,236,470	100.0	14,373,542	100.0	117

SOURCE : 1. Census of Agriculture, 1963, C.B.S.
2. 1973 Agricultural Census, Agriculture I, C.B.S.

The agricultural situation within the economic sector is as follows :

- (a) The agricultural sector is an important component in the economic system of Indonesia, either seen from the number of income earners or from the working force involved.
- (b) About half to over forty per cent of the gross domestic product (GDP) in Indonesia has been generated by the agricultural sector. The proportion of the agricultural sector in GDP has decreased, but the ability of the agricultural sector to meet the national food needs has increased (see table 4).

TABLE 3
CROP PRODUCTION 1969-1975

(1,000—tons)

<i>Commodities</i>	<i>Average 1969-1973</i>	<i>1974 a</i>	<i>1975 b</i>
Rice	13,405	15,276	15,314
Maize	2,733	3,240	2,922
Cassava	10,731	13,775	12,920
Sweet Potatoes	2,219	2,916	3,097
Groundnuts	280	315	380
Soyabean	492	550	518
Mungbean	54	69	52
Vegetables	2,716	2,579	c
Fruits	3,511	5,179	c
Rubber	800	836	891
Coffee	174	160	166
Palm oil	243	347	334
Palm kernel	54	73	69
Copra	1,236	1,357	1,294
Cloves	16	13	23
Tea	65	65	72
Pepper	24	11	30
Nutmeg	9	11	12
Cinnamon	7	7	8
Tobacco	86	68	88
Sugarcane	989	1,282	1,533
Cocoa	0 7	2.7	2.9
Castor beans	3	4	3

*a*Preliminary figures.*b*Estimated figures.*c*Data not available.

SOURCES: 1. Central Bureau of Statistics.

2. Directorate General of Estate Crops.

TABLE 4
RELATIVE AGRICULTURAL SHARE IN THE NATIONAL GDP IN
1966-1973, BASED ON 1960 PRICES
(in billion rupiah)

Explanation	1966	1969	1973	Average agric. growth (%)	
				1966-1973	1969-1973
1. Total GDP	441.9	530.8	707.0	6.94	7.43
2. Agricultural GDP	236.1	260.1	303.0	3.62	3.89
(a) Food crops, livestock, fisheries	184.3	203.6	236.0	3.59	3.76
(b) Non-food crops and estate crops	47.3	48.5	53.0	1.63	2.24
(c) Forestry	4.5	8.0	14.0	17.60	15.02
3. Agricultural percentage of total GDP (%)	53.4	49.0	42.9	—	—
(a) Food crops, livestock, fisheries	41.7	38.4	33.4	—	—
(b) Non-food crops and estate crops	10.7	9.1	7.5	—	—
(c) Forestry	1.0	1.5	2.9	—	—

SOURCES : Central Bureau of Statistics, Jakarta as published by The Kian-Wio, *Indonesia Economics*, Prisma No 2, April 1975.
Quoted by Birowo (1975).

- (c) As shown in the 1971, population census there was a total of 33.4 million or nearly 84 per cent from the total of 39.2 million working in the rural areas, and 72.3 per cent from the total rural population was working in the agricultural sector.

The national development policy mentions the following objective in the agricultural sector in REPELITA II :

- (a) To assist in the improvement of people's income.
- (b) To improve the working opportunities either in new areas, or developing the newly opened areas.
- (c) To assist in obtaining a more equal distribution of income between the various communities and the regions.

The national policy to obtain these objectives is to diversify the programmes in agricultural sector and to promote the cultivation of several crops by the farmers who are able to intensify their agricultural land. Horizontal and vertical diversification, including cattle breeding, fisheries and crop rotation will be activated.

MAJOR ACTION ORIENTED PROGRAMMES

The strategy in agricultural development to secure the national development policy is as follows :

- (a) To emphasize the equal distribution of income in relation to the GDP growth.
- (b) To create the climate which could attract an investment and private sector growth.
- (c) Institution building and improving the regulations.
- (d) Technological skill improvement.
- (e) Establishment of farmers associations/Institutions.

The main programme comprises:

Resource endowments : The human resources which are crucial to development principles from its moral and mental aspects, are expected to be expanded for extension, education and training in order to improve the human moral and mental attitude to accept and react positively to the improvement of agricultural development.

The financial resources need to be expanded by attracting and looking for funds and resources from the communities and regions in order to improve communication facilities, production improvement and improvement in the living conditions.

As for the natural resources which, come from the mineral sources and other mining, marine and air sources, etc., will be expanded to include the development of land use. This means developing the land for agriculture, forestry, estate crops, improve the potential needs in fisheries, livestock development/ rehabilitation of irrigation and protection of critical land. The further possibility of water and soil use development will be examined.

Development of appropriate technology : Remembering the large requirement for power in the working field, the expansion of agricultural intensification will select an adequate technology. The first step is generally considered to be the improvement of traditional treatment, use of High Yielding Variety seed, fertiliser and pesticide use and regular managements of water. Of course at selected places which have low inhabitants it may be necessary to opt for selective mechanisation for crop cultivation.

Major economic interventions : Remembering that the capital situation of the farmers is very weak, it will be necessary to provide for working capital and training assistance in the selection of the technology for agricultural expansion. Assistance in working capital and training can be given in the form of subsidies to the production price, credit supply, and by subsidizing the inputs which will improve the economic efficiency of the farmer, improving the marketing through the village unit and expanding the other assistance which has a favourable impact on the production improvement.

Institutional framework for agricultural development: Apart from the Secretariat General and the Inspector General as Executive Institutions, the Department of Agriculture has 6 performance units, viz., the Director General of Food Crops, the Director General of Animal Husbandry, the Director General of Fisheries, the Director General of Plantation Crops, the Director General of Forestry and the Agency for BIMAS. Beside these there are two supporting units, viz, the Agency for Agricultural Research and Development and the Agency for Agricultural Education, Training and Extension.

Several Director Generals are represented in each province, and within the province are represented at district level through what is called Mantri. Every Mantri has direct communication with the farmers' community. Besides the Mantri there are also

officers who are called the Field Agricultural Extension Officer (PPL) and the Agricultural Extension Specialist (PPS) who are in direct contact with the farmer.

In order to improve the activity of the Mantri, the PPL and the PPS they are in conformity with their several duties trained and upgraded with the latest knowledge either by course or by dissipating new information.

The impact from these programmes can be seen on the production improvement as the result of soil productivity improvement. The productivity improvement can be seen from the yields. The evaluation system is done by report, either monthly, quarterly or annually.

Except for the agricultural improvement the impact is also found on the people's aggregate income and more equal by distributed income between the communities and between the regions. This could be deducted among others from the increase in rice consumption per capita per year by a total of 5.6 per cent for the period of 1968-71 and the decrease of consumption for the substitute foodcrops during the same period (Table 5).

TABLE 5
FOOD CONSUMPTION PER MAN/YEAR DURING THE
PERIOD OF 1968-71

<i>Analysis</i>	<i>Consumption per capita per year in 1917 (kg)</i>	<i>Annual average changes in consumption, 1968-1971 (%)</i>
Rice	107.10	(+)5.5
Maize	19.56	(-)10.8
Cassava	78.22	(-)7.5
Sweet potatoes	18.07	(-)5.3
Groundnut	2.18	(-)4.4
Soyabean	3.94	(-)2.4

SOURCE: C. Peter Timmer, A perspective on food demand in Indonesia 1960-70. Harvard Advisory Group, BAPPENAS 1972, copied by Birowo (1975).

NOTE: BAPPENAS=Agency for National Planning Development.

This could also be seen from the increased use of modern inputs, the increase in activities, improved farmer's participation, increased extension services and increased research efforts.

THE POLICY PLANNING SYSTEM

The important components in the policy system of agricultural planning are as follows:

- (a) The limited development costs.
- (b) The suitability to technology, in accordance with the needs and manpower available for the various activities.
- (c) The development stages in the field of agriculture beginning from the simplest cultivation, arable land system, traditional agricultural system, new technology system (BIMAS/INMAS) up to the semi-agricultural mechanisation system.

For formulating the agricultural planning, the collected data should include:

- (a) Production statistics distinguishing between the realised versus the planned target also the means of production.
- (b) Agricultural resource data including the land use data, land capability appraisal, the size of land and also the intensified area programmes.
- (c) Population statistics including the available manpower.
- (d) The per capita income including the analysis of the income distribution.
- (e) Consumption included food balance sheet, consumption per capita and elasticity coefficient for various food crops.
- (f) The price and trade statistics, also industrial manufacturing, either for domestic use or exports and the institutions involved.

For collecting these materials agency exists, viz., Special Central Bureau of Statistics. Although due to several problems, much responsibility is for the time being given to each department concerned.

The processing of the data by the department is done as part of the planning material, which will later be sent to the Agency for National Planning Development. The Agency for

National Planning Development itself will use the material generated by individual departments overall national planning.

KEY MANAGEMENT ISSUES IN IMPLEMENTATION

The national development must be seen as an overall management system, in which the agricultural sector is a system and at once a 'decision variable' in all those systems.

Considering that each sector has a definite function in the development framework and has as a consequence an influence on everything else the arrangement takes each sector concerned as a part of the development system. To reach the planned destination, the administration and management system has to perform supervision of each function, and bring about coordination, integration and synchronisation between the sectors (KISS), because each sector represents a management problem in its planning, performance and evaluating aspect.

The agricultural coordination problem can be approached from several aspects:

The sectoral, sub-sectoral, programme and project approach: The approach to reach the policy objective must be classified to prevent the possibility of disintegration. In this case this could be overcome by coordination and forward planning, so that every action looks automatic.

The sectoral and regional approach: The development target of every region must be in conformity with the local situation of every region and pay attention to the national target. In principle the start should be developed on a regional basis and is expected to evolve in conformity with agricultural sectoral or sub-sectoral objectives.

The several sources for expenditures: Expenditures for the development projects come from the government and private sources and are limited, therefore, requests for funding should be able to meet the objectives and be realistic and feasible in terms of coordination.

To secure the coordination, integration and synchronisation, the overall national development planning is handled by the Agency for National Development Planning at the national level, and by the Agency for Regional Development Planning at the regional level. Information on the sectoral planning is collected by each department concerned. The final performance

and supervision, outside each department concerned is also followed by the Central Secretariat of Operational Development Command which is managed under the President, and at the regional level by the Governor/Regional Chief as the sole centralised administration in the region concerned.

Panoedjoe, A.T. Birowo and Wahjudi Sugiyo

Analysis and Management of Indonesian Agricultural Development

SOCIO-ECONOMIC BACKGROUND

More than 60 per cent of the Indonesian population lives in Java and Madura. According to the 1971 census, Indonesia had 119.23 million people as shown in Table 1, of which about 80 per cent live in the rural areas. The growth rate of the Indonesian population is expected to be about 2.1-2.3 per cent for the period 1970-1980. As shown in Table 2, the rate of growth in the urban areas is 2 per cent more than in the rural areas, because of: (a) urbanisation and migration, and (b) the mortality rate in the rural areas is higher than in the urban areas. The family planning programme is expected to decrease the population growth in the near future (15 years from now).

TABLE 1
POPULATION OF INDONESIA BY RURAL AND URBAN AREAS
(PERCENTAGE), 1971

<i>Island</i>	<i>Rural</i>	<i>Urban</i>	<i>Total</i>
Java and Madura	52.3	11.5	63.8
Other islands	30.2	6.0	36.2
Indonesia	82.5	17.5	100.0

SOURCE : 1971 Population Census, Central Bureau of Statistics.

NOTE : Population of Indonesia amounts to 119.23 million.

Agriculture remains the largest sector of the Indonesian economy. In the 1960s the Agricultural GDP accounted for over half of the National GDP. Due to the rapid progress made in other sectors of the economy in 1970s, the share of the agricultural sector in the GDP has declined to a little over forty per cent. Total GDP in 1973 based at 1960 constant prices was Rp. 707 billion, of which agriculture contributed 42.9 per cent, mining 7.1 per cent, industry 8.9 per cent, trade 19.5 per cent, communications and transport 3.8 per cent, banks and other financial institutions 2.1 per cent and others 15.7 per cent.

The GDP growth rate between 1968-1973 was about 7.3 per cent which was brought about by a favourable growth in the agricultural sector as well as in the other sectors. Of the agriculture sector forestry showed the most remarkable growth rate at 16.0 per cent which resulted from a boom in forest exploitation during that time.

The structure of the agricultural GDP is characterised by a strong contribution of the food crops. Food crops are contributing more than two-thirds, of the total agricultural GDP. The rest is shared by the other subsectors in the following order: estates and non-food, livestock, forestry and fisheries. Although forest land occupies approximately 60 per cent of the total land area, forestry accounts for only a small portion of the agricultural products. Indonesian GDP and Agricultural GDP are given in Tables 3 and 4.

The growth of food crops at 3 per cent per annum is still behind the rapid growth of the population. To meet the swelling demand for food Indonesia has had to import food which in value amounted to about US \$ 500 million a year. This expenditure on food imports absorbed about 30.3 per cent of the foreign exchange earnings from agricultural exports. Major food imports are rice, wheat grain and sugar.

Agricultural export provide the bulk of foreign exchange earnings of the country in non-oil exports. Total exports in 1973 were valued at US\$ 7,038 million (including oil), of which US\$ 1,230 million was contributed by agriculture or 71.5 per cent. Major agricultural export commodities are rubber, coffee, palm oil and palm kernel, copra, tobacco, tea and pepper. Historically Indonesia is well known for its spices which are still important as export commodities. Indonesia's export value is

TABLE 2
RATE OF POPULATION GROWTH IN INDONESIA BETWEEN
1961-1971, BY RURAL AND URBAN AREAS

<i>Island</i>	<i>Rural</i>	<i>Urban</i>	<i>Rate of Growth rural and urban</i>
Java and Madura	1.6	3.4	1.9
Other island	2.1	4.5	2.4
Indonesia	1.8	3.8	2.1

SOURCE : 1961 and 1971 Population Census, CBS.

TABLE 3
INDONESIAN GDP AT 1960 CONSTANT PRICES BY
SECTORS 1969-1973 (Rp. BILLION)

<i>Sector</i>	<i>1969 Rp. Billion</i>	<i>per cent</i>	<i>1973 Rp. Billion</i>	<i>per cent</i>	<i>Average Growth rate 1969- 1973(%)</i>
1. Agriculture	260	49.0	303	42.9	165
2. Mining	28	5.3	50	7.1	7.9
3. Industry	47	8.9	63	8.9	3.4
4. Trade	89	16.8	138	19.5	55.1
5. Transport/Communica- tions	16	3.0	27	3.8	6.9
6. Banking and other financial institutions	7	1.3	15	2.1	114.3
7. Electricity, gas and water	3	0.6	4	0.6	33.3
8. Construction	12	2.3	27	3.8	125.0
9. Ownership of dwelling, public construction	10	1.8	13	1.8	30.0
10. Defence	29	5.4	34	4.8	17.2
11. Services	30	5.6	33	4.7	10.0
Total	531	100	707	100	
Total US \$ (Billion)	1.28		1.70		

SOURCE : Central Bureau of Statistics.

NOTE : Exchange rate 1 US. \$ = Rp. 415.

TABLE 4
INDONESIAN AGRICULTURAL GDP AT 1960 CONSTANT
PRICES 1968-1973

(Rp. Billian)

Item	1969		1973		Average Growth rate 1968-1973 %
	Value	%	Value	%	
1. Total GDP	496.9	100 0	707.0	100	7.3
2 GDP in Agricultural Sector	255.2	51.4	303.0	42.9	3.5
(a) Food Crops	169.5	34.1	197.0	29.9	3.0
(b) Estates	47.0	9.5	53.0	7.5	2.4
(c) Livestock	20.2	4.1	26.0	3.6	5.4
(d) Forestry	6.8	1.4	14.0	2.0	16.8
(e) Fisheries	11.7	2.4	13.0	1.8	1.0

SOURCE : Central Bureau of Statistics.

given in Table 5.

Land cultivation is divided into two groups of land use, *i.e.*, wet land farming and dry land farming. Wet land farming is mainly covered with rice crops during the wet and dry seasons and the dry land farming is cultivated during the wet season for growing rice and/or such crops as corn, soyabean, peanuts, cassava etc. In 1973 statistics showed that 34.2 per cent of the small farmers operating on wet land and 65.8 per cent on dry land. Large portions of dry land exist on the outer islands. The island of Java and Madura has been intensively cultivated but great potential for agricultural development exists in the outer islands. Land use by type of land and farming systems are given in Table 6.

The size of farm holdings of the small farmers varies from place to place. In heavy populated areas the range is from less than 0.1 Ha to about 2 Ha, whereas in less densely settled areas it may range from less than 0.5 Ha to 10 Ha or more. Average farm size for Indonesia is about 1.1 Ha with an average for Java-Madura and Bali of 0.6 to 0.7 Ha and for the outer islands about 1.5-1.7 Ha. Total number of small farmers in country amount to about 14 million of which 45 per cent are having land of

TABLE 5
INDONESIA'S EXPORT VALUE IN 1969-1975
(US \$ Million)

<i>Sector</i>	<i>Average 1969-1973</i>	<i>1974</i>	<i>1975</i>
1. Total Agriculture	775 (47.3%)	1,852 (24.9%)	1,230 (17.5%)
(a) Food Crops	18	53	32
(b) Estate Crops	498	960	608
(c) Livestock	9	17	17
(d) Fisheries	26	92	70
(e) Forestry	224	730	503
2. Petroleum Products	776 (46.8%)	5,211 (70.2%)	5,281 (75.0%)
3. Other Sector	96 (5.9%)	363 (4.9%)	527 (7.5%)
Total	1,637 (100%)	74,426 (100%)	7,038 (100%)

SOURCE : Central Bureau of Statistics.

TABLE 6
INDONESIA—LAND USE BY TYPE OF LAND 1963-1973
(Million Hectare)

<i>Item</i>	<i>1963 (Million Hectares)</i>	<i>%</i>	<i>1973 (Million Hectares)</i>	<i>%</i>
1. <i>West Land</i>				
Java and Madura	2.52	19.6	2.63	18.6
Outside Java and Madura	1.54	12.0	2.20	15.6
<i>Indonesia</i>	4.06	31.6	4.83	34.2
2. <i>Dry Land</i>				
Java and Madura	3.11	24.2	2.87	20.3
Outside Java and Madura	5.68	44.2	6.45	45.5
<i>Indonesia</i>	8.79	68.4	9.32	65.8
Total Indonesia (1+2)	12.85	100	14.15	100

size less than 0.5 Ha and about 18 per cent between 1.0-2.0 Ha.

The use of irrigation in the Indonesia's agriculture has been known for a long time. The irrigation systems in Indonesia are considered to be among the most extensive and best designed in Asia. The irrigation systems in Bali which is called 'Subak Irrigasi', for instance, dates back to the 1st century, and also some irrigation structures located in Java were constructed many centuries ago.

Based on the type of water management, irrigation systems in Indonesia are classified into three categories, *i.e.*: (a) technical irrigation, (b) semi-technical irrigation and (c) non-technical irrigation.

Technical irrigation is a systems by which water is supplied from a weir with full water measurement and control facilities built into the systems down to the secondary distribution systems. The water is supplied usually during 12 months of the year and the systems is developed, maintained and supervised by the Government

Semi-technical irrigation is a systems by which water supplied in a similar way as the technically irrigated land, but does not have such water control and measurement facilities. The area of semi-technical irrigation land is larger than the available quantity of water, therefore, water for rice crops is given priority during the dry season. The system is owned, maintained and operated by the Government.

Non-technical irrigation systems are usually owned, operated and maintained by villagers. The system is usually constructed by the farmers themselves.

Java has more irrigated area than any other islands, and relatively a higher portion of its rice area is under irrigation. In Java the government owned technical and semi-technical irrigation systems comprise over three-quarters of the total irrigation on the island. On the other hand, outside Java non-technical irrigation is predominant

Rainfed and swampland tidal rice account for less than 20 per cent of Java's area under rice. For other island, swamp/tidal rice account for over 40 per cent of their total rice area.

Rehabilitation of the irrigation system is given high priority in the Pelita. On Java alone about 1.9 million Ha out of 2.6 million Ha of rice field is under irrigation, which has to be

rehabilitated. New construction of a dam and irrigation network is one of major programmes in the development plan.

During the period of Pelita I rice production has annually increased by 4.8 per cent. The harvested area for rice increased from 8.02 million Ha in 1968 to 8.40 million in 1973, and further up to 8.77 million Ha in 1975. Showing an annual increase of about 0.84 per cent. Yield levels for rice increased from 2.79 tons in 1960 to 3.34 tons in 1973, and 3.37 tons of paddy in 1975, or an increase of about 3.8 per cent annually. The increase in yield and harvested area raised the total rice production from 11.7 million tons in 1968 to 14.60 million tons in 1973 and 15.3 million tons in 1975. The production of other food crops include maize, cassava, sweet potato, soyabeans and peanuts vary considerably from year to year depending on weather conditions and also on the market situation. The trend of production for the other food crops has been upward but at a slower rate compared to the growth of the rice production.

In general, all estate crops showed an increased trend in production. For the small holders crops, rubber and coffee have increased steadily, whereas for the estates plantations almost all crops increased their production. During the period of 1973-1975 the combined production of small holders and estates for rubber increased by 0.5 per cent, palm oil 3.1 per cent, copra 2.8 per cent, coffee 0.6 per cent, tea 14.6 per cent, and sugarcane 3.8 per cent.

Both marine and inland fisheries production increased during Pelita I. Marine fisheries increased 0.5 per cent and inland fisheries increased 0.2 per cent or the total increased fishery production during Pelita I was 2.4 per cent. Total fish production was 1.16 million tons in 1968 which increased to 1.30 million tons in 1973 and 1.4 million tons 1975. This increase in production of fish was mainly accounted for by the increase in marine fisheries.

Development in the livestock sector is characterised by an upward trend in production. During Pelita I the production of ruminant meat increased 5.5 per cent for beef, 5.4 per cent for buffalo, 6.0 per cent for goat, and 5.7 per cent for sheep. The production of pork increased 4.8 per cent and poultry meat 7.7 per cent during that period. In 1975 the production of beef increased by 74 per cent over previous level, whereas the pro-

duction of eggs and milk increased by 28.5 per cent and 25.8 per cent respectively.

Despite the production and exports of timber and other forest products they were effected by the worldwide economic recession of the last three years, however the production of timber has experienced a boom during Pelita I. In 1968 the production of timber (including indigenous timber and teak-wood) totalled 5.25 million M³ and increased to 24.70 million in 1973 at 37.3 per cent annual increase. The exports of timber were 1.24 million M³ in 1968 and went up to 19.4 million M³ in 1973, at an increase of 386 per cent annually during Pelita I.

GOVERNMENT POLICIES AND STRATEGIES OF AGRICULTURAL DEVELOPMENT

The Pelita (Five Year Development Plan) is a programme of development strategy in which problems to be solved in the development process are formulated within the framework of the Broad Outline for the State Policy (Garis Besar Haluan Negara), enacted by the National Assembly for government guidance and formulation. The first Pelita was running from fiscal year 1969/70 1973/74 and the second Pelita is from 1973/74 to 1978/79.

In the agricultural sector the development aims at: (a) a sufficient food supply for all groups of the population, (b) an improvement of the farm economy especially of the small farmer, (c) an increase in foreign exchange earnings, (d) a conservation of natural resources and an increase in their production capacity in harmony with a sound environment policy, and (e) an increase in employment opportunities.

During Pelita I the major development programme was centered around the urgent problem of food supply. Accordingly policy priorities were focused on the increased supply of a specific food commodity, especially rice. The development efforts during the current plan have been geared to rehabilitation of existing infrastructure and productive facilities and intensification of rice production through a massive injection of fertiliser and improved seeds. Priority is still given to the provision of modern inputs to the farming sector and to improve the water control. However, the development programme faces a variety of constraints,

The problems of development originated from the fact that the farming community consists of mostly small farmers. These small farmers operate small units of land, spread out over many regions with numerous differences in physical as well as social structure. Hence, there are a wide variety of farming types and techniques between regions, among villages in one region and even among farmers within one village.

The complex problem of the small farmers has been clearly identified during Pelita I and appropriate policy objectives and strategic programmes are planned in the current Pelita II. This involves: (a) diversification of intensification programmes to include other non-rice food commodities such as coarse grains and pulses, poultry, cattle and fishing for small holders, (b) proper credit policy through appropriate interest rate and simpler loan procedure to reach large segments of the poorer farming community, and (c) various government projects to stimulate rural participation in agricultural development.

Concurrent with the development programme in food production the nutrition issue is planned to be solved in Pelita II, creating a nutrition policy and creating an agency for the improvement of people's diet which was established by Presidential Decree to cope with the problem of nutritional deficiency. The function of this agency is to formulate programmes and direct commodity priorities, proper pricing policies and improvement of the distribution and marketing systems.

Various programmes of replanting, estate rehabilitation and improvement of the managerial capability are being carried out to cope with the problems of estates neglected during the pre-Pelita period. Solutions in the field of marketing and credit include: (a) to tackle the lower income groups, (b) the creation of credit insurance such as ASKRINDO State Corporation (Credit Insurance Public Corporation) and Cooperative Credit Insurance called Lembaga Jaminan Kredit Koperasi (LJKK) to help the economically weak groups, and (c) to intensify the efforts to establish Rural Credit Cooperatives within the village unit system.

In the field of unemployment, the approach to tackle the problems are: (a) transmigration schemes with a comprehensive regional development pattern in sparsely populated areas, (b) special schemes to stimulate labour intensive activities in the

rural areas, (c) training to improve the various technical skills of the unemployed labour, and (d) establishment of more diversified agro allied industry and agribusiness

Forestry policies aim at a major expansion of the wood industry first to achieve self-sufficiency in wood product and paper requirements, and secondly to increase sawn wood and plywood for exports. Maintenance of forestry stresses the rehabilitation of water catchment areas, the preservation of the protection forest and nature reserves, the management of productive forests in order to increase yield on a sustained basis, the expansion of the current pulpwood plantations, and the release of forest land that can better be utilised for agriculture.

Development programmes in forestry emphasise increase of timber and other forest products for both domestic consumption and for exports. Special attention is given in the forest exploitation to take strict control in logging operations in order not to damage the natural resources. Rehabilitation and replanting of forests belong to the priority programmes currently undertaken in Pelita II.

A strategy for fishery development stresses on increasing the productivity of inland fisheries and the efficiency of fish-catch and harvest, particularly to increase the production of shrimp and tuna fish to permit a suitable increase in domestic fish supplies as well as for exports. These objectives are to be achieved through modernisation of fishing boats and gear, training fishermen in better knowledge of catching techniques and the establishment of onshore facilities such as rice making, freezing, storage, processing and marketing.

Livestock development is being looked upon as a tool for raising the aggregate income of the existing small holder community. Development programmes in livestock focus on improvement of breeding. Recently an artificial breeding (A I.) Centre was opened, and it serves the farmers with artificial insemination for both beef and dairy cattle. In 1974 about 21,636 ampules of frozen semen were used which increased to 32,217 ampules in 1975 recording an increase of 49 per cent. This programme is introducing high yielding strains into the traditional breed in order to improve the production of meat.

Regional development recognises the geographical limitations and development is being viewed at two conditions, that is the

central area the Java, Madura and Bali islands and the outer islands. For the central area the development strategy aims at improving the efficiency and productivity of agriculture by further intensification programmes improving and rehabilitation of irrigation networks, utilisation of dry land farming with dry season crops, and development of additional agricultural based enterprises which can take advantage of available labour. The outer islands are quite different, *e.g.*, they are labour scarce. Their development strategy therefore aims at the intensified rehabilitation and expansion of the existing estates and extensification of secondary food crops such as maize, rice, soyabean, etc. Development of infrastructure and programmes of resettlement are also on the priority list. Government coordination is a prime task for the success of these immense development programmes.

ADMINISTRATIVE SYSTEM

The Ministry of Agriculture comprises of a Secretary General and Inspectorate General, and five Directorates General namely, Directorate General of Food Crop Agriculture, Directorate General of Estates/Plantations, Directorate General of Forestry, Directorate General of Animal Husbandry, and Directorate General of Fisheries. For research and training, special bodies were formed, they are the Agency for Agricultural Research and Development and the Agency for Agricultural Education, Training and Extension. Both are directly under the Minister of Agriculture.

The regional function of the department is coordinated by the regional offices. Staff functions are carried out by the Secretary General and the function of the Inspectorate General is to control the implementation of the agricultural programme.

An organised effort to increase the rice production was first started by the government in 1958 and is called Bimas (Guidance Mass Intensification). The Bimas programme is a concerted effort between various institutions, its activities comprise 4 major groups, namely, (a) activities by the government institutions, (b) activities by traders such as importers, distributors, retailers, etc., (c) activities by bankers, and (d) activities by the farmers themselves.

To organise those activities the government has set up farmer coordinating bodies at the national level as well as in the region. The coordinating body at the national level is called *Badan Pengendali Bimas* with the Ministry of Agriculture being the chairman, and other institutions such as Ministry of Public Works, Ministry of Trade, Ministry of Home Affairs, Ministry of Transmigration, Agricultural Indonesian Bank (BRI), Bulog (Agency of National Logistics), etc., as members. The coordinating bodies in the provinces are *Badan Pembina Bimas* with the Governor as the Chairman.

All problems in planning, implementation and evaluation of the programme are discussed in these coordinating bodies. Being the active participants, farmers in the Bimas programme are organised in groups. This grouping of the farmers aim to have an effective control of implementation of the programme and by doing that the objective of an injection of technology to the farmers can be more efficient. Cooperative bodies are also established particularly in the supply of insecticides and in the activities of marketing of the products.

Several agricultural development approaches are being carried out. They are: (a) the regional approach, (b) the project approach, (c) the structural approach, (d) the sector or sub-sector approach.

The regional approach emphasises regional plan and is promoted by Bappenas. Such an approach may be inward looking, in the sense that regional balances are maximised. Regional planning takes time because of the large number of trained personnel required. Bappenas also tries to promote regional development and specialisation through the establishment of the Development Territories. The degree of success depends upon the availability of central funds. The coordinated use of regional funds needs strengthening.

The project approach has a long tradition and is operating within the Ministry of Agriculture through the various Directorate Generals. Coordination and linkages need to be developed. Good projects are scarce and adequate background data at the reconnaissance level is needed. Institution and good sense determine the priorities, requirements of project planning. The manpower availability in the Planning Bureau does not meet all the requirements for coordination on questions such as

resource allocation for land and funds, comparative advantage, economic back stopping and analysis, all with the view of improving per capita income and creating more employment among the projects proposed by the sub-sector through the Directorate General.

The structural placing approach through the establishment of two agencies, *viz.*, one for Agricultural Research and Development and one for Education, Training and Extension which, by its very existence should stress that development in agriculture should essentially be geared to effective extension services for the transfer of research results to farmers. This approach makes it difficult to follow a system of priorities.

The sector or sub-sector approach at national level which develops a national strategy programme with the subsequent division into regional and project components.

The monitoring system for implementing agricultural project development in particular is based on the Bappenas system. At the regional level the system of monitoring for implementation of project development is coordinated by the Governor. There are quarterly reports, montly reports and annual reports. These reports should be delivered to Bappenas, the Governor, the Secretary General, and the Directorate General. The coordination of implementation of the monitoring system in the Ministry of Agriculture is carried out by the Secretary General, Ministry of Agriculture.

The project officers should report the physical and financial progress of their project development. These reports should be delivered to the institutions as mentioned above. The Directorate General will prepare reports of implementation of his programme based on a physical and financial progress reports of the implementation of project development in each Directorate. These progress of implementation of the programmes should be delivered to the Ministry of Agriculture through the Secretary General. The Secretary General will make the monthly Sectoral Progress Report. And this report should be delivered to the President. The system and form of the reports themselves seem to be rather complicated and they must be accomplished. Some Directorate General and the Inspectorate Generals have built an Operation Room for monitoring the implementation of their respective programme. In monitoring the implementation pro-

gramme the MIS (Management Information System) is now being tried.

INSTITUTIONAL INFRASTRUCTURE

The institutional infrastructure for providing agricultural inputs such as seed, fertiliser, credit facilities is formulated and channelled through Village Unit Economic Activities (BUUD/KUD) and BRI (Agricultural Bank) Village Unit.

Badan Usaha Unit Desa (BUDH) meaning Village Unit Economic Activities, was first established in 1971 in Yogyakarta (Special Region situated in Central Java). This BUUD was developed as a business association of farmers agricultural association within an area of one village unit. One BUUD includes several villages and covers an area of 600 to 1000 hectares. BUUD is being legalised to become an official cooperative which is called KUD, meaning Village Unit Cooperatives.

The formation of BUUD/KUD, is aimed to help the government in performing economic policy including the activities of inputs/supply distribution, marketing of agricultural products and purchasing of rice for national stocks.

Besides that, the establishment of BUUD/KUD provides employment opportunities in the rural areas, and with its promoting efforts this organisation could help the extension service to induce the use of new technology to the farmers.

The historical development of BUUD/KUD through the country since 1971 was as shown in Table 7.

TABLE 7
NUMBER OF BUUD/KUD

<i>Year</i>	<i>BUUD</i>	<i>KUD</i>	<i>Total</i>
1971	35	—	35
1972	635	—	633
1973	1,748	625	2,373
1974	1,712	986	2,698
1975	1,357	1,974	3,331

SOURCE: Directorate General of Cooperatives, 1975.

BUUD/KUDs are organised and coordinated under the Directorate General of Cooperatives, Ministry of Manpower, Transmigration and Cooperatives. The operation of the BUUD/KUDs is financed by two sources, *i.e.*, funds from the cooperative members, and long-term and low interest credit from the Village Bank Unit.

The credit system for the Bimas programmes are implemented by the Bank Rakyat Indonesia (Agricultural Bank) through the BRI Village Units. For sparsely populated villages and isolated areas the government organised Rural Mobile Units to serve the farmers in these areas. Currently there are about 3,000 Village Bank Units (there were 545 such units in 1970) and about 250 Mobile Units. The creation of those Village Units stimulates the rapid commercialisation of rural farming.

The credit programme is provided to the farmers as a package which includes seed, fertiliser, insecticide and cost of living allowance.

The credit programme for rice covers all provinces of Indonesia, except Irian Java. It covers more than 4 million hectares of paddy field area and more than 2.3 million farmers.

In the latest three years the package credit system has also been applied in the field of animal husbandry, of sugar cane, of fisheries and of other small holder plantation/crops.

In Java there is a non-institutional credit source called 'Ijon', in which credit is supplied by private individuals, usually rich farmers, huller owners and local officials. Unfortunately, there are no definite data on the extent of this 'Ijon' system. 'Ijon' is really the money lender practice common in many rural areas.

Chujio Ozaki

Management of Agriculture in Japan

A. SOCIO-ECONOMIC ENVIRONMENT

Introduction

During the period of 1960's, Japanese economy has developed at very rapid pace, particularly in the last half of the decade. A growth rate of GNP in real terms during the period of 1960-1965 was 9.7 per cent per annum (compound rate), while during the period of 1965-70 it was 11.6 per cent (Table 1). During the period of 1970-74, however, the pace of the economic development has tended to slow down. Consequently, it can be said that, during the period of these 10 years, the former 5 years have been prosperous while the latter 5 years have been recessed time. Particularly, from the middle of 1973 to 1975, a long recession period has continued. The growth rate of GNP in 1974 was 0.2.

1965 to 1970

In Japan, as the growth rate of population is around 1.1 per cent per annum, per capita income has increased very rapidly during the period of 1965-70. National income per capita in 1965 was Yen 267,000, which increased to Yen 566,000 by 1970 or increased by 16.2 per cent per annum (compound). Private consumption at current price has increased by 15.0 per cent (9.2 per cent at constant price) per annum during the period. The private consumption for food and drink has also increased by 12.8 per cent at the current price (6.6 per cent at constant price) during the same period.

TABLE I
ECONOMIC INDICATORS

	1960	1965	1970	1974	1965* /60	1970* /65	1970* /60	1974* /70
Gross Agr. Products								
(1,000 mil.)								
Nominal	162,070	328,137	730,461	1,363,393	15.2	17.4	16.2	16.8
Real	261,838	415,918	721,440	902,680	9.7	11.6	10.7	5.8
Private Expend.								
(1,000 mil.)								
Nominal	90,652	186,311	375,213	734,485	15.5	15.0	15.3	18.3
Real	155,469	238,125	369,600	475,017	8.9	9.2	9.0	6.5
Private Expend. for Food and Drink								
(1,000 mil.)								
Nominal	38,666	70,147	127,940	242,084	12.7	12.8	12.7	17.3
Real	68,081	91,580	126,147	147,825	6.1	6.6	6.4	4.0
Net Domestic Product								
(1,000 mil.)								
Nominal	132,934	262,150	592,906	1,130,634	14.5	17.7	16.5	17.5
Net Domestic Agri. Product								
13,566		21,574	32,537	55,157	9.7	8.6	9.1	19.1
Share of Agr.	10.2%	8.2%	5.5%	4.9%				

<i>Manufacturing Industry</i>									
Prod. Index	28.3	48.0	100.0	115.9	11.1	15.8	13.5	3.8	
Persons engaged (index)	69.4	84.5	100.0	100.9	4.0	3.4	3.7	0.2	
Labour productivity (index)	40.8	56.8	100.0	114.9	6.8	12.0	9.4	3.5	
<i>Agriculture</i>									
Prod. Index	79.5	88.9	100.0	101.9	2.3	2.4	2.3	0.5	
Persons engaged (index)	147.5	121.0	100.0	74.5	-3.9	-3.7	-3.8	-7.1	
Labour productivity (index)	53.9	73.5	100.0	36.8	6.4	6.4	6.4	8.2	
<i>Share of Net Domestic Production by Industry</i>									
Prim.	29.7	23.1	17.1	12.9					
(Agr.)	(26.8)	(20.6)	(15.9)	(11.6)					
Second	28.3	32.1	35.2	36.1					
Tert.	141.9	44.8	47.5	50.8					

* Figures shown in these columns are average annual rates (compound).

SOURCE : National Account Statistic (Eco. Planning Board), Annual Agricultural Report of the Government, 1975.

As a result, the demand for food has been high during the period. Net domestic product at current price has increased by 17.7 per cent per annum during the period of 1965-70, while net agricultural product has increased by 8.6 per cent in the same period.

Agricultural production index, however, during the same period has increased only by 2.4 per cent. Agricultural price index has increased by 5.5 per cent per annum during the period.

Among agricultural products, the production of rice in 1967 was 14,453,000 metric tons or 13 per cent higher than that in the previous year and was an unprecedented bumper crop. Moreover, in 1968 and 1969, the production was also more than 14,000,000 tons, though a little less than in 1967.

Around 48 per cent of total net intake of calorie of a Japanese people average 1960-64 was derived from rice, while that in 1965-69 was around 41 per cent. If all the starchy food are taken into account, the net intake of foods from them decreased from 67 to 60 per cent. It means that Japanese people have tended to take more protein and vitamin rich foods rather than starchy foods during the period. Actually the total demand for rice in Japan in this period was around 12,000,000 tons. Consequently the surplus rice was accumulated during this period partly being induced by the support price system for rice, and the Government was forced to take a policy for adjustment of planted area of rice in 1970. This problem will be discussed more in detail later. On the other hand, the demand for animal products has increased high during this period and hence the import of feedstuffs showed the same trend.

This raised the problem of self-sufficiency rate of food in Japan. The Government policy in recent years has been oriented to the selected expansion of agricultural production to meet the demand of the people, and agricultural production except rice has been expanded to meet the changes in demand for food. As far as rice is concerned, it has been the main agricultural product for farmers and main staple food consumed in Japan. As a consequence, the rice policy, particularly price policy, has still been the main concern of the Government. Supported by the price policy, the rice production has been induced even

though rice production became surplus.

Due to a high increase in demand for non-starchy food, and animal feedstuffs the imports of wheat, barley, soybean whose import prices are much lower than domestic prices have increased enormously. As a result, the self-sufficiency rate of overall foodstuffs was around 75 per cent in 1970 compared to 81 per cent in 1965. For the feedstuffs only, the self-sufficiency rate dropped from 44 per cent in 1965 to 33 per cent in 1970. The decrease in production of barley and wheat was also caused by the lack of labour in agriculture, since they had been mainly produced as winter crops after rice and farmers preferred to work in the urban area where they could get better wage than growing such crops. During 1965-70, the overall agricultural production index has increased by 12.5 per cent or average 2.4 per cent per annum, as mentioned earlier.

However, agricultural production has tended to decrease since 1969 and in 1970 it decreased by 2.4 per cent compared to that in the previous year. This was caused mainly by the Government policy for adjusting planted area of rice starting from 1970 by which the rice production decreased and partly by an unfavourable weather condition which influenced other crops.

Prices of agricultural products have increased by 31 per cent or at the annual rate of 5.5 per cent during the period of 1965 to 1970. An annual increase in the rice price from 1968 to 69 was 7.2 per cent, while that of the following year was only 2.8 per cent. This was attributable to the low price from 1968 to 1971. This official producer's price of rice during the period has remained unchanged reflecting the accumulation of burdensome surplus of the Government rice stock which reached nearly 11,000,000 metric tons in 1970 due to the decrease in demand and bumper crop.

Gross agricultural product has also shown annual increase of 11.7 per cent during the period of 1965 to 70. The increase, however, during the period of 1965 to 68 has been 11.7 per cent per annum, while those in 1968-69 and 1969-70 have been 6.6 and 1.1 per cent respectively. A very low increase in 1969-70 is due mainly to the decrease in rice production and unchanged rice price in this period.

Despite the increase in agricultural production, persons engaged in agriculture has decreased corresponding to the rapid

economic growth. During the period of 1965 to 70, the persons engaged in agriculture has decreased by more than 17 per cent or at the rate of 3.7 per cent per annum. This decrease in population was particularly large in 1970, showing a 5.9 per cent decrease compared to that in the previous year.

The production index of manufacturing industry during the period of 1965-70 has increased by 15.8 per cent annually and the index number of persons engaged in manufacturing industry has increased by 3.4 per cent every year. The labour productivity index of manufacturing industry has grown by 12 per cent annually. The agricultural production index has been raised by 2.4 per cent per annum, while the index number of persons engaged in agriculture has fallen at the rate of 3.7 per cent during the period mentioned above. As a result, the labour productivity of agriculture has increased by around 6 per cent annually during this period.

From 1960 to 1965, the labour productivity of manufacturing industry and agriculture has increased at the annual rates of 6.8 per cent and 6.4 per cent respectively, while, as shown in the foregoing paragraphs, the annual increase rates in both productivity from 1965 to 70 were 12.8 per cent and 6.4 per cent respectively. This means that during this period the discrepancy of per capita income between agriculture and industry has been widened.

Most of Japanese farmers do not live on only agricultural income but also subsidiary jobs. As a result, the average income or expenditure of farm household is not so different from that of wage earning households.

In 1965, the average household expenditure per person of farm household was Yen 115,500, while that for wage earner households was Yen 139,700 or that for farm households was 17.3 per cent less than that of the wage earners (Table 2). In 1970, same percentage of difference became 4.7 per cent. If we take the figure by size of population of towns and cities, the average household expenditure per person of farm households was 2.16 per cent lower than that in towns and cities with population more than 50,000 but the difference was only 5.3 per cent if we compare it with towns and cities whose population is less than 50,000.

The same difference in 1970 became 7.4 per cent less if it is

compared to large cities and 3.4 per cent more comparatively with the smaller towns and cities.

Income distribution of farm households does not always correspond to the size of holding. Annual average household expenditure per person of farm households whose size of holding is less than 0.5 hectare in 1970 was Yen 264,000, while that of farm households whose size of holding is more than 2 hectares was Yen 224,400 in the same year. Up to farm households whose size of holding is less than 1.5 or 2 hectares, the larger the size of holding is, the less the household expenditure per person. For the households whose size of holding is more than 2 hectares, the same expenditure was more than that of other farm households except those less than 1 hectare. This means that the size of agricultural income corresponds to the size of holding, but small farmers have more income from off-farm jobs which is reflected in the larger income or household expenditure for the smaller farmers. Another reason for this is that the smaller farmers, in some cases, grow vegetables and flowers in vinyl or glass houses from which they get much higher income though high investment is required for the houses. It is also found that the household expenditure per person of less than 1 hectare in 1970 was higher than that for towns and cities with population less than 50,000, and that of less than 0.5 hectare was more than that in all the cities including those of population more than 50,000.

This shows increases in the number of part-time farm households and also in income from off-farm jobs. In 1970, average annual income of farm households in Japan was Yen 1,596,400 among which Yen 898,500 or 56.3 of the total was from off farm income. The number of farm household in Japan in the same year was 5,261,000 of which 84.8 per cent was part-time farm households.

In 1970, the income from rice decreased due to the adjustment of rice acreage and that from livestock products also decreased due to fall in the prices. Farm income, however, did not change so much compared to that in the previous year. Because the increase in off-farm income for the small farmers off-set their reduced agricultural income, and for the large farmers whose income is derived mainly from agriculture, their agricultural income did not drop so much as small farmers

TABLE 2
COMPARISON OF PER CAPITA CONSUMPTION EXPENDITURE PER YEAR
BETWEEN FARM HOUSEHOLD AND WAGE EARNER HOUSEHOLD

	Farm Households (A) (1,000 yen) National Average	(1,000 Yen) National Average (B 1)	Wage Earners Households (B)			Cities (A) × 100 (B 3)
			(A) × 100 (B 1)	More than 50,000 (B 2)	(A) × 100 (B 2)	
1965	115.5	139.7	82.7	147.3	78.4	121.9
66	130.8	154.1	84.9	162.3	80.6	134.3
67	156.0	170.7	91.4	179.4	87.0	147.6
68	177.4	194.2	91.3	199.9	88.7	177.4
69	207.6	218.8	94.9	225.4	92.1	200.7
70	236.8	248.6	95.3	255.7	92.6	228.9
Comparison by size of holding	(A ¹)		A ¹ + 100 B1		A ¹ × 100 B2	A ¹ + 100 B3
Less than	228.5		104.4		101.4	113.9
0.5 hec.	264.0		106.2		103.2	115.3
0.5 —	205.3		93.8		91.1	102.3

1.0 hec.	1970	231.5	93.1	90.5	101.1
1.0 —	1969	195.7	89.4	86.8	97.5
1.5 hec.	1970	222.9	89.7	87.2	97.4
1.5 —	1969	200.2	91.5	88.8	99.8
2.0 hec.	1970	215.8	86.8	84.4	94.3
More than	1969	206.9	94.5	91.7	103.0
2.0 hec.	1970	224.4	90.3	81.8	98.0

SOURCE : Farm Household Survey, Ministry of Agriculture and Forestry.
 Prime Minister's Office : Household Expenditure Survey.

because of the improvement of productivity both in rice cultivation and animal husbandry.

Persons engaged in agriculture have decreased during the period of 1965-70, and also persons who engaged fully in agriculture have decreased too. The latter type of farm household became only 15.2 per cent of the total farm households in Japan.

Agricultural population has decreased by 12.6 per cent and non agricultural population has increased by around 24 per cent during the period of 1965 to 70. Number of population whose age is more than 60 in agricultural population was 14.4 per cent in 1960, and that in 1965 became 16.7 per cent of the total agricultural population. The same percentages in non-agricultural population were 8.3 and 8.6 respectively in 1960

TABLE 3
OLD AGE POPULATION IN AGRICULTURAL AND
NON-AGRICULTURAL POPULATION

	<i>Year</i>	<i>Total</i>	<i>More than 55</i>	<i>More than 60</i>	<i>More than 65</i>
Agr. Popul.	1965	30,083	5,792	4,333	2,938
		* 100.0)	(19.3)	(14.4)	(9.8)
	1970	26,279	5,821	4,041	3,081
		* 100.0)	(22.2)	(16.7)	(11.7)
Increase (Decrease —) rate		*—12.6	0.6	1.6	4.9
Non Agr.	1965	62,192	7,735	5,192	3,243
		* (100.0)	(12.4)	(8.3)	(5.2)
	1970	77,077	9,631	6,637	4,254
		* (100.0)	(12.5)	(8.6)	(5.5)
Increase (Decrease —) rate		*—23.9	24.5	27.8	31.2

*Figures shown in these columns are per cent.

SOURCE: Agricultural Census (Ministry of Agriculture and Forestry).
Population Census (Prime Minister's Office).

and 1965. This means that old age population is concentrated more in agricultural population.

1970 to 1974

As mentioned earlier, Japanese economy during 1970 to 74 has recessed, particularly after the middle of 1973.

Gross national product at current price during the period of 1970-74 has increased by 16.8 per cent, but in real terms it has increased only by 5.8 per cent. During the period of 1970 to 72, the wholesale price index has been rather stable, however, since 1973 it has tended to increase.

In 1972, as the economic growth reached as high as 11.0 per cent compared to 6.6 per cent in the previous year, the demand and supply condition became very tight and the prices tended to go up. In 1973, the deficiency of world food supply coupled with war in Middle East which influenced shortage of oil have spurred on the inflational trend. From 1973 to 1974, the wholesale price index increased by 31 per cent. The consumers price index also increased by 24 per cent during the same period, though it had already increased by 24 per cent during the period of 1970 to 1973.

Private consumption expenditure increased nominally by 18.3 per cent per annum but at constant price it was only by 6.5 per cent, among which that for food and drink has increased by 17.3 per cent per annum at current price but only 4.0 per cent in real terms. As a result, although the economic growth in nominal terms has been high due to the inflation, in real terms the growth rate of GDP has decreased from 9.2 per cent in 1965-70 to 6.5 per cent, and private consumption expenditure decreased from 6.6 per cent to 4.0 per cent during 1970-74.

Net domestic product at current price during the period of 1970-74 increased by 17.5 per cent, among which net agricultural product has increased by 14.1 per cent. Nominally, the increase was much higher than that of the period of 1965-70, during which it increased by 8.6 per cent. Prices received by farmers have increased by 60 per cent which was caused by the rise of the official rice price of 65.5 per cent.

Consequently, agricultural production index during the period has increased only by 2.2 per cent or an average annual

increase of 0.5 per cent. Among agricultural products, rice production has increased 3.4 per cent during the period of 1970-74 and those crops which increased production during the period have been flowers (78 per cent), fruits (18 per cent) and vegetables (2.3 per cent). Wheat and barley production decreased by 52.8 per cent. On the other hand, livestock products have increased by around 11 per cent, among which that of broiler has been the highest (37.5 per cent).

Though the growth rate of consumption expenditure for food and drink has not been so high as the previous period, yet demand for superior food continued to grow. This caused increase in the import of food and feedstuff particularly for poultry and piggery. As mentioned earlier, overall sufficiency rate of food in 1970 was 76 per cent, but it decreased to 72 per cent in 1975, among which the rate for wheat and soybean in 1974 was only 4 per cent of the total supply. And for the feedstuffs the self-sufficiency rate was 30 per cent in the same year.

During these five years, again persons engaged in agriculture have decreased by as much as 7.1 per cent per annum, compared to a 3.7 per cent decrease during the period of 1965-70.

The Growth of Production index of manufacturing industry during the period of 1970-74 has been only 3.8 per cent per annum, compared to 15.8 per cent during the previous five years average, and index number of persons engaged in manufacturing industry has increased by only 0.2 per cent annually which was also much less than the rate during previous five years.

As a consequence, the labour productivity of manufacturing industry has increased by only 3.5 per cent per annum compared to a 12 per cent increase in the previous average of five years.

In the agricultural sector, production index has increased by only 0.5 per cent per annum, however, persons engaged in agriculture have decreased by 7.1 per cent annually, so that the labour productivity increased an average annual growth of 8.2 per cent compared to 6.4 per cent in the previous five years.

In this respect, the relative discrepancy of per capita income between manufacturing industry and agriculture narrowed down during these five years.

Average total income of farm household in Japan in 1974

was around Yen 3,400,000, among which around Yen 2,000,000 was from off-farm income or around 60 per cent of the total income, compared to around 56 per cent in 1970.

Total persons engaged in agriculture accounted for 11.6 per cent of the total economically active population in Japan, compared with 15.9 per cent of the total in 1965 and 10.2 per cent in 1960.

Average farm household expenditure per person in 1974 was

TABLE 4
COMPARISON OF CONSUMPTION EXPENDITURE
BETWEEN FARM HOUSEHOLD AND WAGE EARNER

<i>(Index Wage Earner-100)</i>				
	<i>Farm Household</i>	<i>Index in Comparison with Wage Earner of Cities with Population</i>		
	<i>Consumption Expenditure</i>	<i>National Average</i>	<i>More than 50,000</i>	<i>Less than 50,000</i>
<i>(1,000 yen)</i>				
National Average				
1965	115.5	82.7	78.4	94.7
70	236.8	95.3	92.6	102.5
73	380.5	105.8	103.6	113.5
74	467.6	105.1	103.0	112.2
Comparison by Size of Holding				
1974				
less than 0.5 hec.	519.9	115.7	113.5	123.6
0.5—1.0 hec.	468.4	105.3	103.2	112.4
1.0—1.5 „	428.4	96.3	94.4	102.8
1.5—2.0 „	421.2	94.7	92.8	101.1
more than 2.0 hec.	419.9	94.4	92.5	100.8

SOURCE : Farm Household Economy Survey (Ministry of Agriculture).
Household Expenditure Survey (Prime Minister's Office).

around Yen 468,000 which was 97 per cent higher than that in 1970 (nominal value). It was 5 per cent higher than that of wage earners in urban area in Japan, and 3 per cent higher than wage earners in cities whose population is over 50,000 and 12 per cent higher than wage earners in cities and towns whose population is less than 50,000.

It seems to be rather strange, because the farm household expenditures per person for households whose size of holding is smaller show more household expenditure than larger ones. The highest expenditure, namely, around Yen 519,900 was observed in average of farm households of less than 0.5 hectare and gradually decreased according to size of holding reaching Yen 419,900 for those of more than 2.0 hectares. As mentioned earlier, this shows that the small farm households have more subsidiary jobs and some of them are engaged in capital intensive vegetable and/or flower growing with glass or vinyl houses on small plot of land. Percentage distribution of persons engaged in agriculture whose ages are 15 to 24 was only 4.5 per cent and that for those 55 years old and more was 34.5 per cent, among which that for 65 years old and more was 13.2 per cent of the total in 1974. It shows that the persons engaged in agriculture became older and the successors became less in farm.

B. GOVERNMENT POLICIES AND STRATEGIES WITH RESPECT TO AGRICULTURAL DEVELOPMENT

Economic policy in Japan since 1960, when Hayato Ikeda became the Prime Minister, has been aimed for maximisation of economic growth which was called 'Doubling Income Plan' at that time. This plan for rapid growth caused differentiations of income amongst industrial sectors and income classes. When Eisaku Sato took the premiership, the policy turned towards redressing such differentiations. His administration continued until 1973. However, such differentiations have not been corrected, and the high rate of economic growth has continued.

These plans were based on the prediction that the economic growth rate would be around 8 per cent per annum. Actually, however, the economic growth has always been more than 10 per cent per annum throughout the period. In 1973, after Kakuei Tanaka took premiership, the New Economic and Social Basic Plan was launched. The aims of the plan were welfare

TABLE 5
AGE STRUCTURE OF AGRICULTURAL WORKER
1974

	<i>1,000</i>	<i>Percentage</i>
Male—Female	6,040	100 0
15—24	290	4.8
25—34	690	11.4
35—44	1,310	21.7
45—54	1,670	27 6
55—64	1,280	21 2
More than 65	800	13 3
Male (among which)	2,810	

SOURCE : Labour Force Survey (Prime Minister's Office).

of the people and advancement of international cooperation. Under this plan, the evil influences of the rapid economic growth were pointed out and the policy emphasised the welfare of the people rather than high economic growth which had created various problems such as pollution and so on. In the field of agriculture, the reflections on the agricultural problems caused by the rapid economic growth were required. According to the plan, the evil influences of high economic growth on the agricultural sector should be overcome to realise a welfare society. For this purpose the role of agriculture, forestry and fisheries is to encourage the following policy measures: (1) to stabilise supply of food and other products efficiently; (2) to develop a village depending on agriculture, forestry and fisheries for a healthy rural community; and (3) to attain the role of conservation of the national land, and maintenance of the national environment.

For this purpose the emphasis of agriculture was laid on: (1) to foster highly efficient agriculture and stabilisation of supply of agricultural products, and (2) establishment of welfare oriented rural villages.

The basic idea of agriculture after the land reform which had been achieved soon after the World War II was indicated by

the Agricultural Basic Law enacted in 1961. At that time, Japanese economy showed a wide gap of development between agricultural sector and other sectors of economy under the rapid growth of economy. The new agricultural policy and administration was directed towards the correction of growing gap of income and living standard between the urban workers and the rural farmers, and towards adjusting farm production to the changing demand for agricultural products. These were not solved by the Land Reform alone.

The aims of the Basic Law are shown as "raising agricultural productivity to minimise the gap in the productivity between agriculture and other industries by increasing the income of the farm population and thus achieving a balance in standard of living between the farm population and other industrial workers."

The policies and administration that are to be carried out to achieve these aims are to cover aspects of production, marketing, prices and the structure of agriculture. They are summarized as follows:

- (a) to plan for the selective expansion of agricultural products;
- (b) to plan for the raising of agricultural productivity and the promotion of all the products;
- (c) to plan for the improvement of agricultural structure;
- (d) to plan for the rationalisation of the marketing and processing of agricultural produce;
- (e) to plan for the stabilisation of the agricultural prices and securing a fair income to farmers;
- (f) to plan for the education and training of farm managers and operators and assistance for the people willing to find proper jobs other than agriculture; and
- (g) to plan for the improvement of the living environment and living standard of rural population.

The selective expansion which is referred in (a), means "to promote the production of agricultural products with rising demand, to switch the agricultural production with falling demand over to that of other products with higher demand, and rationalise the agricultural productions that are in competition with imported agricultural products."

The improvement of agricultural structure mentioned in (b)

means encouraging the development of viable family farm and promotion of joint operation of farming. In order to make agriculture a more advanced and promising rather than an old worn down sector in Japanese economy, it is important to encourage the formation of highly productive family farms that are well off and stable as a social force. It is also important to look forward to use more machinery in farm work.

As mentioned earlier, the rice production became surplus, and the new problems emerged. In 1968, the Government asked the Agricultural Policy Council to study 'the basic questions that must be considered in pursuing future agricultural policies' against the background of changing situation at home and abroad. Based on the Report of the Council, the Government announced a cabinet decision in 1970 titled "On the Promotion of Integrated Agricultural Policy and Administration" concerning the basic agricultural policy and administration and measures to be taken for the year 1970. The idea behind the term "Integrated Agricultural Policy and Administration" was to reflect upon the past policy and administration of the Agricultural Basic Law which had concentrated mainly on promotion of production by raising prices of rice, though the law itself had indicated selective expansion of agricultural production. Looking forward, the new directives recommended the policies whose aims are to improve the agricultural productivity and structure rather than just to raise the prices of agricultural products, to encourage the production of other products in greater demand and to bring the consumers as well as the producers into consideration.

Agricultural situation changed markedly after 1973 influenced by various factors mentioned in Chapter A.

According to the "Annual Report of Agriculture" of the Government, the following policy measures will be emphasized:

- (1) In view of raising the self-sufficiency rate of agricultural production, planning to secure and equip fully land and water resources at first and then utilise them highly efficiently for instance by more intensive utilisation of paddy field for wheat, barley and other fodder crops after rice. And as indicated in the report "Long-Term Projection for Demand and Supply of Agricultural Production" submitted by National Food Conference

to the Government, to encourage production of livestock products, vegetables, fruits, wheat, barley, soybean and forage crops

(2) To train and secure the successors who lead agriculture in future, to establish services to the fuller utilisation of agricultural land according to the "Law of Arrangements for Agricultural Encouragement Areas", and to encourage organisation of group farming. And also to encourage extension services more specifically for the farmers who will become successor or nucleus of future agriculture. Improve and expand the financing and taxation of agriculture as well.

(3) To stabilise the import of agricultural products which the country was obliged to import due to the limitation of national land resource and others. In August 1975, Minister of Agriculture and Forestry of Japan and the Secretary of Department of Agriculture of the USA concluded agreement for importing annually 14,000,000 metric tons of feedgrains, soybean and wheat. Also other arrangements were made with other countries. Various economic and technical cooperations are also being arranged for the developing countries for their agricultural development.

(4) To meet the changes in wage, price and other economic factors in recent years, price policies were expanded for livestock products, vegetable, etc., to secure agricultural income for the producers, and also to stabilise their farm management. The modernisation of marketing and processing were materialised as well as the protection policies for consumers. The recent changes in agricultural budget are shown in Table 6.

C. ADMINISTRATIVE SYSTEM

The Ministry of Agriculture is in charge of production, marketing and consumption of agriculture, forestry and fisheries. The Ministry consists of Minister's Office, Agriculture and Forestry Economy Bureau, Structural Improvement Bureau, Agriculture, Sericulture, Horticulture and Livestock Bureaus and Food Marketing Bureau. Besides these bureaus, there are three Agencies: Food Agency, Forest Agency and Fisheries Agency.

Minister's Office has Research, Planning and other Divisions. Agriculture and Forestry Economy Bureau has Credit, Agricultural Cooperatives, Agricultural Insurance, International Plann-

ing. International Economy, International Cooperation and, Trade and Tariff Divisions. In the Agricultural Forestry Economy Bureau, there is a Statistics and Information Department. The Department has Library, Electronics, Planning and Information, System Analysis, Economic Statistics, Crop Statistics, Horticulture Statistics Fisheries Statistics Divisions

The Structural Improvement Bureau has Agricultural Policy, Structural Improvement, Employment Improvement, Administration, Agricultural Land Management, Planning Resources, Technical, Designing, Water Utilization, Arrangement, Development and Countermeasure against Calamity Divisions. There is an Agricultural, Forestry and Fisheries Research Council in the Ministry. The role of the Council is to make coordination, cooperation of all the research works of the Ministry including agriculture, forestry and fisheries. It has a President and six members of the committee, and an administration office.

Experiment stations are under the supervision of Agriculture, Forestry and Fisheries Research Council. There are the National Institute of Agricultural Sciences (Tokyo), Central Agricultural Experimental Stations (Saitama). Six National Regional Agricultural Experimental Stations (Hokkaido, Tohoku, Hokuriku, Chugoku, Shikoku, Kyushu). National Livestock Experimental Station, Agricultural Engineering, Sericulture Experimental Stations are also under the Ministry of Agriculture and Forestry. There are the National Research Institute of Agricultural Economics, Zoo Technology, Food Research, Plant Virus, and Tropical Agricultural Research Center under the Ministry.

There are National Statistics Offices in every prefecture under the Ministry of Agriculture and Forestry. Besides National Experimental Stations, there are 47 Prefectural Experimental Stations under the supervision of Prefectural Governments.

D. INSTITUTIONAL INFRASTRUCTURE

In Japan, all the villages have one or more cooperative associations and most of which are multipurpose cooperatives. Almost all the farmers in Japan are members of cooperatives. There are Prefectural Federation of Cooperative Associations. Most of the cooperatives at prefectural level are called Prefectural Economic Cooperatives, which handle marketing and purchasing activities. For the credit activity, there are Prefecture

TABLE 6
CHANGES IN EMPHASIS OF AGRICULTURAL BUDGET

	1960 (A)	1974 (B)	1975 (C)	(B)/(A)	(C)/(A)
	(Yen/100,000,000)				
1. Agricultural productivity improvement and expansion of total agricultural production	462	3,840	4,544	831	984
2. Selective expansion of agricultural products	33	2,548	1,844	7,721	5,588
3. Structure improvement	40	646	771	1,615	1,928
4. Price stabilisation and securing agricultural income	312	9,078	8,576	2,910	2,749
5. Rationalisation of marketing	50	1,242	1,239	2,840	2,478
6. Welfare of persons engaged in agriculture	5	140	191	2,800	3,820
7. Agricultural association	18	160	162	644	900
8. Others	466	2,477	2,673	552	574

(a) Counter-measures against natural calamities	351	1,408	1,576	401	449
(b) Others	115	1,069	1,097	930	954
Total Agricultural Budget	1,386	20,088	20,000	1,449	1,443
Total Budget for Ministry of Agriculture and Forestry	1,669	22,499	22,892	1,348	1,372
Total National Budget	17,652	191,981	208,372	1,088	1,180

SOURCE : Annual Agricultural Report of the Government, 1965.

Credit Cooperatives. In the Center, there are National Federation of Cooperative Association, the Central Bank of Agricultural and Forestry Cooperatives. The cooperative associations in the villages handle marketing of agricultural products, purchasing of agricultural inputs and consumer goods of farmers, and deposit and credit of farmers. There are also agricultural insurance associations which handle crop and livestock insurance of farmers. For the irrigation purposes there are farmers' associations called the Land Improvement Associations which handle water management of irrigation project including distribution of water in the irrigated areas.

REFERENCES

In Japanese

1. *Nogyo ni Kansuru Nenhi Hokoku* (Annual Agricultural Report of the Government), through 1965 to 1967. Tokyo, Ministry of Agriculture and Forestry.

2. *Agriculture, Forestry and Fisheries Statistics*, Tokyo, Statistics and Information Department, Ministry of Agriculture and Forestry, 1976.

In English

3. Nishimura, Koichi, *Agriculture in Japan*, 1970, Tokyo, Japan F A O. Association, 1970.

4. Owaia, Keiki, *Agricultural Policies and Administration in Japan*, Tokyo, Japan F A.O. Association, 1973.

Historical references of Japanese Agriculture (in English)

1. Ogura, Takekazu, (ed), *Agricultural Development in Modern Japan*, Tokyo, Japan F.A O. Association, 1963.

2. Tsuchiya, Keizo, *Productivity and Technological Progress in Japanese Agriculture*, Tokyo, University of Tokyo Press, 1976

3. Hayami, Yujiro, et al.: *A Century of Agricultural Growth in Japan*, Tokyo, University of Tokyo Press, 1975.

Sung Hwan Ban

Management of Agriculture in Korea

SOCIO-ECONOMIC BACKGROUND

Agriculture in the National Economy

In the 1960's and the first half of 1970's economic development was the primary policy objective in Korea. Every effort was directed toward the achievement of self-sufficient economy and self-national defense. During the last 10 years from 1966 to 1975, the Korean economy grew at an annual compound rate of 10.4 per cent. However, the growth of agriculture has lagged compared to that of the non-agricultural sector. During the same period agriculture grew at an average annual rate of 4.1 per cent compared to a 13.3 per cent rate of growth in non-agricultural sector. Especially average annual growth rate in the mining and industrial sector was 19.1 per cent for the period. The social overhead capital and service sector grew at an annual rate of 10.4 per cent during the same period.

TABLE 1

ANNUAL COMPOUND GROWTH RATE, 1966-1975

	(in per cent)
Agriculture	4.1
G N P.	10.4
Social overhead capital	10.4
Mining and manufacturing industry	19.1
Non-agricultural growth rate	13.3

The lower growth rate in agricultural sector, consequently, made the relative position of agriculture in the national economy to decline. In 1966 agriculture-forestry-fishery sector shared slightly less than 40 per cent of gross national product. On the other hand 44 per cent of gross national product was generated from this sector in 1956.

TABLE 2
COMPOSITION OF GNP BY INDUSTRIES

	<i>(in per cent)</i>			
	1966	1969	1972	1975*
Agriculture, forestry and fishery	38.9	30.5	25.2	21.9
Mining and manufacturing	15.9	20.8	26.2	33.0
Social overhead capital†	9.1	13.1	12.9	13.7
Other services	36.1	35.6	35.7	31.4

*Preliminary.

†Includes construction, transportation, storage, communication, electricity, water and sanitary services.

SOURCE : The Bank of Korea, Economic Statistics Year Book, 1976.

The relative position of this sector had been consistently declining in the past 30 years. As can be seen in Table 2, the share of agriculture, forestry and fishery sector accounts only slightly less than 22 per cent of gross national product in 1975. Also absolute number of farm population and the proportion of rural population to total population had been declining. Farm population accounted for over 55 per cent of total population in 1965, but it declined to 40 per cent in 1974.

In spite of the declining tendency of the farm population, the absolute number of persons employed in primary industry (*i.e.*, agriculture, forestry and fishery) had been increasing in the past ten years. It indicates decreasing tendency of disguised unemployment in rural area. However, the proportion of persons employed in agriculture, forestry and fishery sector to total persons employed had declined for the past ten years. It declined from 58 per cent in 1966 to 48 per cent in 1974.

TABLE 3
TOTAL AND FARM POPULATION IN KOREA

	<i>No. of Population in 1,000</i>		<i>Annual Growth rate</i>		<i>Per cent of Farm Pop. to Total Popula- tion</i>
	<i>Total</i>	<i>Farm</i>	<i>Total %</i>	<i>Farm %</i>	
1965	28,327	15,812	2.28	1.7	55.8
1966	29,160	15,781	2.12	-0.2	54.1
1967	29,541	16,078	2.28	1.9	54.4
1968	30,171	15,908	2.01	-1.1	52.7
1969	30,738	15,589	1.85	-2.0	50.7
1970	31,435	14,422	1.77	-7.5	45.9
1971	31,828	14,712	1.69	2.0	46.2
1972	32,360	14,677	1.67	-0.2	45.4
1973	32,905	14,645	1.68	-0.2	44.5
1974	33,459	13,459	1.67	-8.1	40.2

SOURCE : Bureau of Statistics, Economic Planning Board, Korea Statistical Year Book.

By the above observation we can recognise that agriculture is a relatively declining industry in Korean economy. The rapid growth in industry and urbanisation made agriculture to decline relatively in national economy. The lower income elasticity and inflexible supply of resources for agricultural production which are inherent to the industry restricted the rapid growth of this sector comparable to other sectors.

In the past the government had been investing and providing loans to agricultural sector. Table 4C shows the amount of government investment and loans to agriculture, forestry and fishery as well as total investment and loans (For details see Appendix II).

The government investment and loans in agriculture-forestry-fishery account for 20 to 30 per cent of total government investment and loans. The government investment and loans in

TABLE 4A
PERSONS EMPLOYED BY INDUSTRY AND OCCUPATION

(number in 1,000 persons)

	1966	1968	1970	1972	1974
<i>By Industry</i>					
Agriculture, forestry and fishery	4,879	4,801	4,916	5,346	5,584
Mining and manufacturing	913	1,282	1,395	1,499	2,062
Construction and services	2,634	3,072	3,434	3,714	3,940
<i>By Occupation</i>					
Professional, technical, managerial and civil Services	257	357	462	389	382
Clerical	396	406	576	679	748
Sales	987	1,227	1,199	1,228	1,459
Farmers and loggers	4,711	4,554	4,672	5,125	5,296
Fishermen	182	234	226	232	304
Services	481	556	636	723	778
Others	1,409	1,821	1,974	2,183	2,619
Total	8,423	9,155	9,745	10,559	11,586

TABLE 4B
PERSONS EMPLOYED BY INDUSTRY AND OCCUPATION
(Composition in per cent)

	1966	1968	1970	1972	1974
<i>By Industry</i>					
Agriculture, forestry and fishery	57.9	52.4	50.5	50.6	48.2
Mining and manufacturing	10.8	14.0	14.3	14.2	17.8
Construction & services	31.3	33.6	35.2	35.2	34.0
<i>By Occupation</i>					
Professional, technical, managerial and civil services	3.1	3.9	4.7	3.7	4.4
Clerical	4.7	4.4	5.9	6.4	6.5
Sales	11.7	13.4	12.3	11.6	12.6
Farmers and loggers	55.9	49.7	48.0	48.5	45.7
Fishery	2.2	2.6	2.3	2.2	2.6
Services	5.7	6.1	6.5	6.9	6.7
Others	16.7	19.9	20.3	20.7	22.6
Total	100.0	100.0	100.0	100.0	100.0

TABLE 4C
GOVERNMENT INVESTMENT AND LOANS

(in million won*)			
Year	Total Government Investment and Loans (A)	Agriculture Forestry & Fishery (B)	Per cent of Agriculture, Forestry & Fishery (%)
1966	62,579	18,905	30.2
1967	84,412	20,030	23.7
1968	117,588	32,980	28.0
1969	188,795	49,711	26.3
1970	184,332	44,139	23.9
1971	213,330	52,494	24.6
1972	297,061	59,359	20.0
1973	248,559	64,640	26.0
1974	390,282	111,359	28.5

*The exchange rate of 483 won for one US dollar prevails.

agriculture-forestry had been increasing. But investment in fishery sector did not increase. It had declined sharply in 1974. When we take account of inflationary trend, investment in this sector had declined over time.

The major items of investment and loans in agriculture sector include the construction of land base and irrigation facilities. In the recent past a large proportion of investment and loans is allocated to the improvement of environment and rural electrification.

Income Distribution

There existed a significant disparity in income levels between rural and urban sectors. The farm income had been consistently lower than that of urban household prior to 1974. Average farm household income was 60 per cent of an urban salary-wage earner's household income in 1967 and 67 per cent in 1970.

However, the relative position of farm income had been consistently improving since 1967. In 1974 the money income of farm household overpassed that of urban salary-wage earner's household. Three main reasons can be attributed to the relative improvement of farm income. They are : (1) The government price support programme on staple grains of rice and barley. (2) The productivity growth of rice brought about by the adaptation of high-yielding new variety of Tongill (*i.e.*, one of variant of IBR 667). (3) The Saemaul Undong (New Community Movement) which implements various projects and programmes to increase income of farm and fishery households.

Farm income grew faster than urban salary-wage earner's household income. We can observe in Table 5B that the growth rate of farm income is higher since 1970 when the Saemaul Undong was initiated than the prior period. It is interesting to notice that the growth of farm income is accelerating while that of urban wage earner's is decelerating leading to near equal income levels between them. The income equality might have resulted from the commitment of various government programmes in collaboration with the increased mobility of people, resources and flows of information brought about by the development of transportation and communication facilities over the past 15 years.

TABLE 5A
INCOMES OF FARM AND URBAN SALARY-WAGE EARNER'S
HOUSEHOLD

Year	Income, 1000 won				A/Bx100 (%)
	at current prices		at 1970 constant prices		
	Farm*	Wage Earner**	Farm+	Wage Earner++	
	(A)	(B)			
1965	112	113	216	201	99.1
1966	130	162	224	259	80.3
1967	149	249	226	360	59.8
1968	179	286	227	373	62.6
1969	218	334	251	387	65.3
1970	256	381	256	381	67.2
1971	356	452	311	398	78.8
1972	429	517	329	408	83.0
1973	481	550	436	420	87.5
1974	674	645	350	397	104.5
1975 _p	873	859	367	422	101.6

*Ministry of Agriculture and Fishery, *Report on the Result of Farm Household Economy Survey*, 1975.

**Economic Planning Board, 'Monthly Statistic'.

+Deflated by Price Index paid by Farmers.

++Deflated by Consumer Price Index in all cities.

P—Indicate Preliminary.

There is a trend that inequality in income distribution in urban household is increasing over time in accordance with rapid economic progress. This is especially true among unidentified urban households.¹ It will be worthwhile to know whether income inequality among farm households has increased during the period of rapid economic progress. Table 5C presents the

¹T. Mizoguchi, D.H. Kim and Y.I. Chung, "Over-Time Changes of the size Distribution of Household Income in Korea (1963-1971)", presented in the Joint Seminar on Korean Income Distribution, May 1976, Seoul, Korea.

TABLE 5B

GROWTH RATE OF HOUSEHOLD INCOME

(Annual growth rate, per cent)

Period	at Current Prices		at 1970 Constant Prices	
	Farm	Wage Earner	Farm	Wage Earner
1966-70	20.7	22.2	5.3	9.2
1970-74	25.0	15.2	6.5	1.5
1966-74	20.1	16.4	5.2	4.7

Growth rates between three years averages centering the year shown

TABLE 5C

INCOME INEQUALITY OF FARM HOUSEHOLD

(Gini ratio)

Year	1967	1968	1969	1970	1971	1972	1973	1974
Gini ratio	.2928	.2844	.2976	.2968	.3117	.2974	.3109	.3192

SOURCE : Ministry of Agriculture & Fisheries, *Report on the Results of Farm Household Economy Survey, 1978 through 1975.*

indicators of changes in income inequality for the period of 1967-1974. The inequality has slightly increased but not significantly. This is true because there has not been any material changes on the size distribution of land holdings among farms. Furthermore the government policy for rural development was not formulated in favour of certain class of farm.

Land System and Land Utilisation

Land System : During the Japanese occupation period (1910-1945) tenancy had been increasing steadily and by the late 1930's more than 60 per cent of all cultivated land in South Korea was owned by landlords rather than cultivators.

Part of the tenant farmed land had been owned by Japanese landlords prior to 1945. The remaining part was

owned by Korean landlords.

After liberation the U.S. military government created the New Korea Corporation to administer tenant-farmland formerly owned by the Japanese. That Corporation was replaced by the Central Land Administration Office. This office distributed over 240,000 hectares of farmland formerly owned by Japanese landlords to the former tenant cultivators of the land. By the establishment of the Republic of Korea Government on August 15, 1948 the Land Reform Law was legislated in March 1950. Under this legislation the government purchased and distributed nearly 330,000 hectares of farmland by 1952. On the other hand, over 570,000 hectares might have been sold directly by landlords to their tenants.²

By the implementation of the land reform law operator-owner land system was established. As can be seen from Table 6 land reform succeeded in turning most of Korea's cultivated land over to the families that were cultivating it. The number of owner-operators rose dramatically and the number of tenants fell to an insignificant proportion of 7 per cent in 1965.

TABLE 6

OWNER TENANT DISTRIBUTION OF FARM HOUSEHOLD

(in per cent)

	1945	1965
Full Owner	13.8	69.5
Owner-Tenant	16.4	15.5
Tenant-Owner	18.2	8.0
Tenant	48.9	7.0
Others	2.7	—
Total	100.0	100.0

SOURCE: Ki Hyuk Pak, *et al.*, *A study of Land Tenure System in Korea* (Seoul: Korea Land Economics Research Center, 1966), pp. 87, 89 and 131.

²Jae Hong Cho, "Post-1945 Land Reform and their Consequences in South Korea" (Unpublished doctoral dissertation, Indiana University, 1964).

Therefore it can be concluded that the tenancy does not cause any serious problem in Korean agriculture.

Land Utilisation: There are 1,269,000 hectares of paddy field and 969,000 hectares of upland totalling to 2,238,000 hectares in Korea as of 1974. Korean farm management is characterised by the small holding of the cultivated land. Average holding of cultivated land per farm household is 51.5a (\pm are) of paddy and 40a of upland. The land is scarce resource and the labour is relatively abundant resource in Korean agriculture. Therefore Korean farmers follow the labour intensive farm management practice to increase land productivity. In spite of the increasing productivity of land the inelastic supply of cultivated land had been the major limiting factor to the rapid increase of aggregate agricultural production. During the last 10 years from 1964 to 1974 the area of paddy field increased at an annual compound rate of only 0.06 per cent, upland at 0.64 per cent and total cultivated land at 0.31 per cent respectively.

TABLE 7
AREA OF CULTIVATED LAND

	<i>Cultivated Land (1,000 ha)</i>			<i>Per Farm Household</i>	
	<i>Paddy</i>	<i>Upland</i>	<i>Total</i>	<i>Paddy</i>	<i>Upland</i>
1964	1,261	910	2,171	51.5(a)	37.1(a)
1969	1,283	1,028	2,311	50.4	40.3
1974	1,269	969	2,238	53.3	40.7

SOURCE: National Agricultural Cooperative Federation, *Agricultural Cooperative Year Book*, 1975.

Due to the inelastic supply of land a great effort has been given to raise land productivity including innovation and diffusion of bio-chemical technology and land quality improvement. The expansion of irrigation facilities received a great consideration in the allocation of government investment and loans. Table 8 shows the changes of paddy component by the irrigation facilities. Completely irrigated paddy has increased

by 27 per cent from 1967 to 1974. On the other hand rain-fed paddy has declined to less than half during the same period accounting to only 6.9 per cent of total area planted to rice in 1974. Irrigated, completely and partially irrigated area now account for 93 per cent of total planted area to rice.

TABLE 8
AREA PLANTED TO RICE BY IRRIGATION FACILITIES

		(in 1,000 ha)					
Land Class	Year	1965		1970		1974	
		Area	%	Area	%	Area	%
Irrigated by Irrigation Association		281	23.4	304	25.7	309	24.3
Completely Irrigated		421	35.1	544	46.0	584	46.0
Partially Irrigated		299	24.9	223	18.8	289	22.8
Rain-fed		198	16.5	113	9.5	88	6.9
Total		1,199	100.0	1,184	100.0	1,270	100.0

When horizontal expansion of land resource is limited, land supply can be expanded vertically by increased use of given land for a given period of time. However, the utilisation rate remained almost constant with multiple cropping index of around 150 for last 16 years from 1955 to 1971.³ Further the multiple cropping index had dropped to 134 in 1974.

Table 9 shows the areas planted to various crops. Total crop area declined sharply from 1967 to 1974. The crop area for food grain crops including rice, barley and wheat, miscellaneous grains, pulses and potatoes has declined for the period. But crop area for cash crops including special crops, fruits and vegetables has increased during the same period. The latter has increased from 6.4 per cent of total crop area in 1967 to 9.6 per cent in 1971. The increase of areas planted to cash crops reflect the rapid increase of demand for those crops brought

³Sung Hwan Ban, *Growth of Korean Agriculture (1918—1971)*, Korea, Development Institute, 1974, p. 47.

about by the increase of population and rising level of per capita income. As the income elasticity of fruits and vegetables are being higher than other food grains the demand for these crops increase faster than food grains as economy progresses. Also the lack of substitutes for these crops by import stimulate domestic production of them to meet increasing demand.

TABLE 9
CROP AREAS PLANTED TO VARIOUS CROPS

(in 1,000 ha)

Crops	Year	1967		1974	
		Area	%	Area	%
Rice		1,246	37.5	1,214	40.4
Barley and wheat		1,151	34.6	942	31.4
Miscellaneous grain		162	4.9	82	2.7
Pulses		380	11.4	352	11.7
Potatoes		196	5.9	124	4.1
Special crops		45	1.4	70	2.3
Fruits		47	1.4	73	2.4
Vegetables		100	3.0	146	4.9
Total Crop area		3,327	100.0	3,003	100.0

Distribution of Land by Size of Cultivated Land

Although average holding of cultivated land by a farm household is 91.5a (*i.e.* are), individual farms differ by size of cultivated land. Farm household that owns less than one half hectares account for 32.4 per cent of total farm households as of 1973. A slightly less than 64 per cent of total farm household owns less than one hectare of cultivated land in the same year. As can be seen from Table 10 there is a tendency that the proportion of small size farm household which owns less than half a hectare is declining while proportion of middle size of farm household which owns 1.0-2.0 hectares of land is increasing. The proportion of small farm size group declined from 42.9 per cent of total farm household in 1960 to 32.4 per cent in 1973. The farm size of 1.0-2.0 hectares had proportionally

increased in total farm households. It has increased from 20.7 per cent in 1960 to 26.3 per cent in 1973. It can be said that the farm size is getting larger. This tendency will continue as farm population migrate out of agriculture and agricultural mechanisation proceeds in accordance with urbanisation and industrialisation of the national economy.

TABLE 10
DISTRIBUTION OF FARM HOUSEHOLD BY SIZE OF
CULTIVATED LAND

Farm size/ Year	(in per cent)		
	1960	1971	1973
Under 0.3 ha	19.7	15.6	15.4
0.3—0.5 ha	23.2	17.1	17.0
0.5—1.0 ha	30.1	31.7	31.5
1.0—2.0 ha	20.7	26.0	26.3
2.0—3.0 ha	6.0	4.8	4.8
Over 3.0 ha	0.3	1.5	1.5
Others	—	3.4	3.5
Total	100.0	100.0	100.0
Total number of farm households in 1,000	2,349	2,483.	2,450

SOURCE: NACF, *Agricultural Year Book*, various editions.

Agricultural Production in General

Agricultural sector as a whole has been growing at a compound rate of 2.8 per cent per annum for the period from 1964 to 1974 (see Table 11). This indicates that the growth rate of agriculture is decelerating. It grew at a rate of 4.6 per cent per annum for the period of 1955-1964.⁴ Most of recent year's growth has occurred in non-calorie-producing foods and non-food agricultural items. The growth rate of rice output fell

⁴S H. Ban, *op. cit.*, p. 31,

from 3.6 per cent for the period 1955-1964 to 1.3 per cent for the period 1964-1974. Overall grain output fell from an annual rate of 3.8 per cent to 0.5 per cent. As can be seen from Table 11, all of barley and wheat, miscellaneous crops and potatoes

TABLE 11
COMPOSITION AND GROWTH RATE OF AGRICULTURAL
PRODUCT—1964-1974

<i>Agricultural Products</i>	<i>(in per cent)</i>		
	<i>Composition</i>		<i>Annual</i>
	<i>1965</i>	<i>1973</i>	<i>Growth Rate</i>
	<i>1965-1973</i>		
Rice	42.07	37.43	1.29
Barley and wheat	12.02	9.20	-0.58
Miscellaneous crops	0.66	0.39	-3.57
Pulses	2.28	2.83	5.64
Potatoes	7.35	3.72	-5.62
Grain totals	64.37	53.57	0.46
Fruits	2.25	3.82	9.81
Vegetables	11.99	15.61	6.24
Special crops	1.09	1.33	5.30
Tobacco and ginseng	2.49	4.28	9.96
Sub-total	82.19	78.60	2.22
By-products	4.69	4.48	2.22
Total crops	86.88	83.08	2.22
Livestocks	10.39	10.59	3.04
Livestock products	2.19	4.56	12.64
Livestock and its products	12.58	15.15	5.20
Silk and cocoon	0.54	1.77	19.24
Total	100.00	100.00	2.79

Composition and growth rates between three years averages centering the years shown.

made negative growth during the past 10 years. On the other hand fruits, vegetables, special crops, tobacco, Ginseng, livestock and its products, and silk production are continually growing at high rate.

The different growth rates among commodity groups are reflected in the relative position of commodities in agricultural sector. The share of rice and overall food grains has been declining in total agricultural production. The shares of most of cash crops and livestock products and silk and cocoon have been increasing over time.

The lower growth rate in food grains caused the shortage of domestic supply to meet rising demand due to population growth and increasing incomes. The solution, therefore, was to raise the level of grain imports. Grain imports tripled in the latter half of the 1970's (see Table 12). The expenditure for grain import has increased more than ten times from 1964 to 1975.

Prior to 1972 the rising grain imports was facilitated by low world prices for the grains. However, grain prices in the international market have risen dramatically in recent years. Under the circumstance of rising world prices for grains Korea was able to increase imports of grains without imposing a heavy burden on its balance of payment by rapid expansion of industrial exports.

Anyhow the decelerating growth rate and increasing import for grains imply the declining self-sufficiency. The rate of self-sufficiency for grains has declined from 93 per cent in 1961 to only 70 per cent in 1975.

GOVERNMENT POLICIES AND STRATEGIES IN RESPECT OF AGRICULTURAL DEVELOPMENT

The achievement of self-sufficiency in food grains and increasing farm incomes are the major goals of agricultural policy. To meet these ends the following policy measures are sought to be implemented:

1. Increasing farm production;
2. Promotion of livestock production;
3. Expansion of Saemaul Income Augmentation Projects;
4. Improvement of structure of Agricultural Marketing System;

TABLE 12
IMPORTS OF FOOD, KOREA

Year	<i>Food and Live Animals (million U.S. Dollars)</i>	<i>Grain (incl. flour)</i>	
		<i>(1000 m. t.)</i>	<i>(million U.S.\$)</i>
1964	68	648	62
1965	61	686	54
1966	72	588	81
1967	94	814	79
1968	168	1,269	129
1969	302	2,280	85
1970	319	1,986	163
1971	400	—	195
1972	358	—	285
1973	570	—	452
1974	818	—	613
1975	947	3,118	689

Imports include official aid, relief, foreign loan and commercial imports.

5. Increasing Efficiency in Operation of Agricultural and Fishery Cooperatives; and
6. Promotion of Rural Savings.

Above all, by increasing farm production the policy sought to materialise self-sufficiency in food grains. An agricultural production increase plan for the period of 1962 to 1966 was formulated in conjunction with the Five-Year Economic Development Plan. Again a seven-year agricultural production increase plan was formulated in order to achieve a complete self-sufficiency in food grains during the period of 1965 to 1971. The results were not satisfactory. Fortunately the nation achieved self-sufficiency of staple food grains of rice and barley by bumper crops in 1975,

Expansion and Quality Improvement of Arable Land

Land is the most important primary factor of agricultural production. Agricultural output is determined by the acreage and productivity of arable land. Policies for the provision of land base include the expansion of cultivated land through reclamation of mountainland and tidal flat, the development of irrigation facilities, and the rearrangement of farmland into efficient unit for the mechanisation. Table 13 shows the accomplishment of farmland development.

TABLE 13
PROVISION OF PRODUCTIVE FACILITIES

(in hectares)

<i>Period</i>	<i>Development of Farmland</i>	<i>Land Re- arrange- ment</i>	<i>Irrigation Facilities</i>	<i>Total</i>
1946—1950	236	—	18,139	18,375
1951—1960	11,451	—	215,490	226,941
1961—1970	163,205	149,452	484,064	796,721
Total	174,892	149,452	717,693	1,042,037

SOURCE: MAF and ADC, *Summary of Agricultural Water Resource Projects*, 1973, p. 53.

Expansion of Cultivated Land: The supply of farm land is very inelastic. The potentiality of new farmland development is also limited. The acreage of farm land increased by 11.3 per cent for the period of 1955 to 1974. The acreage of paddy field and upland increased to 6 per cent and 19.1 per cent respectively during the same period. In spite of limited land development potentiality the government had been following the policy to expand farmland. The Land Reclamation Law was passed in 1962. Most of the increased acreage of the upland occurred for the five years period since the legislation of the law. Approximately 109,000 hectares of land was developed during the period of 1962-1966. This accounts

for 61 per cent of land development potentials as of 1967.⁵ While farm land is expanding by the reclamation of hilly area and tidal flat the existing fertile land is converting into industrial site, urban homestead lots and highway construction leaving total farmland to submarginal change. The reclamation of tidal flat is mostly carried out by the sub-governmental organisation of Agricultural Development Corporation.

In the long run the government attempts to develop 575,000 hectares of new farmland. It plans to develop 239,000 hectares of new farmland by the end of Fourth-Five-Year Economic Development Plan period of 1977-1981.

Expansion of Irrigation Facilities : Approximately 57 per cent of total cultivated land consisted of paddy field. Most of the paddy is planted to rice. The yield of rice depends greatly on adequacy of water supply. Output of rice as well as other crops fluctuated in wide range depending on rainfalls at needed time. Therefore the government placed a high policy priority on the development of water resource. As can be seen from Table 13 more than 717,000 hectares of paddy has become irrigated by the water resource development project. The irrigation project includes the construction of irrigation dam and water reservoir, installation of water pumping stations and ground water development. As of 1974, more than 70 per cent of rice crop area was completely irrigated and 23 per cent was partially irrigated.

Land Rearrangement : The farmland rearrangement project was intended to make field layout into more efficient unit for the mechanisation of farming to the end of increasing land productivity. For the last decade more than 149,000 hectares of paddy field was rearranged.

Supply of Agricultural Production Materials

Fertiliser : One of the most important developments in Korean agriculture was the increasing use of commercial fertiliser. Two types of fertilisers were purchased: inorganic chemical fertilisers and organic fertilisers from both plant sources (mostly soybean oil cakes) and animal sources (mostly fish cakes).

⁵Jin Hwan Park, *An Economic Analysis of Land Development Activities in Korea*, Seoul National University, Nov., 1969,

Organic fertilisers have disappeared from the commercial market channels since 1947. The consumption of commercial fertiliser more than doubled during the fifteen-year period from 1953 to 1968.

Because the fertiliser production capacity was located in North Korea all of the consumption of chemical commercial fertiliser in South Korea was dependent on imports until 1961 when a domestic fertiliser plant began to supply urea to the domestic market. Since then domestic production of chemical fertiliser increased rapidly under the First, Second and Third-Five-Year Economic Plan period from 1962-1976. By 1969, the overall capacity of domestic production of chemical fertilisers reached the level of self-sufficiency. For the last ten years of 1964 to 1974, the consumption of commercial fertiliser had increased by 93 per cent. On the other hand domestic production had increased by almost twelve times during the same period (see Table 14).

The application of chemical fertiliser per hectare has increased from 174 Kilograms in 1965 to 374 Kilograms in 1974 indicating 9 per cent growth rate per annum. The increased fertiliser application is mainly due to the diffusion of fertiliser responsive high-yielding rice variety and expanded crop area of vegetables and special crops.

Until 1973 the government followed dual price system on commercial fertiliser. The government purchased from producers at acceptable market price and distributed to farmers at lower price through agricultural cooperatives. The difference was subsidised with the government budget. At the end of 1973 faced to worldwide energy crisis the government raised the price of commercial fertiliser by 65 per cent. The part of increased burden to farmers due to the rising fertiliser price was compensated by the increased government purchasing price of rice and barley.

Pesticide: Before the end of World War II the agricultural use of pesticide was limited. Nowadays pesticide is widely used by all farmers on almost all crops. The nation's annual consumption of agricultural pesticide increased from 2,000 metric tons in 1946 to 12,547 metric tons in 1965 and then to 62,603 metric tons in 1974. The nation's production of agricultural pesticide

has also increased from 10,237 metric tons in 1965 to 54,319 metric tons in 1974.

In Korea, rice crop is affected by rice blast and sesame leaf blight. In order to prevent damages by blight and insect, the government is encouraging the domestic production of farm pesticide and enforcing various measures including the timely supply of farm pesticide, the supply of preventive equipment and materials, and collective control of disease and insects.

TABLE 14
CONSUMPTION AND DOMESTIC PRODUCTION OF
CHEMICAL FERTILISER

<i>Year</i>	<i>Consumption (1,000 M/T)</i>	<i>Production (1,000 M/T)</i>
1964	923	141
1965	1,033	164
1966	1,075	189
1967	1,126	421
1968	1,179	1,057
1969	1,194	1,223
1970	1,213	1,276
1971	1,310	1,291
1972	1,429	1,361
1973	1,776	1,436
1974	1,781	1,641

SOURCE : MAF, *Year Book of Agriculture and Forestry Statistics*, 1972, 1975.

Agricultural Implements and Machines : The government is pursuing agricultural mechanisation to increase agricultural production and to meet labour shortage in rural area

brought about by the migration out of rural area to urban area. For the effective implementation of agricultural mechanisation the land rearrangement programme is underway. Although Agricultural cooperative is providing loans to farmers to purchase power tillers and water pumps. In order to insure the adequate utilisation of farm machines, a joint utilisation system is considered. The number of power tiller had increased from 653 in 1964 to 60,056 in 1974, threshing machine from 825,000 to 116,000, etc.

Agricultural Credit

Farmers need the short-term capital for purchase of fertiliser, farm pesticide, feed, seeds and for wage payment to hired labours as well as the long-term capital to purchase farmland, installation of irrigation facilities, and construction of farm buildings. When they do not have enough fund to meet required expenditure they try to borrow money from private market and financial institutions. Institutional finance to farmers are mostly provided through agricultural cooperatives. The agricultural cooperatives raise the loanable funds from government loans, borrowing from the Bank of Korea (Central Bank), deposits and their own capital. The proportions of these financial sources are subject to change depending on government policy. In 1974, desposit consisted of 51.4 per cent of total fund from all sources, 420 billion won, the government loan accounted for 17 per cent and borrowing from the Bank of Korea 24 per cent respectively.

Annual interest rates for borrowing the agricultural cooperative differ by the source and use of the fund. It ranges from 7 to 15 per cent; short-term production loan charges 12 per cent, loans for farm and fishing exportation 7 per cent, medium term loans, 9 per cent and other loans, 15 per cent.

The interest rate of institutional finance is usually much lower than in curb market. Therefore the supply of institutional credit is always short of demand. Thus available loanable fund is rationed according to the government policy.

Agricultural Marketing and Pricing

The marketing of farm products is primarily left to private sector subjecting to the government regulation set up for the

sanitary and effective transaction of the commodities. However, the government interferes through market operation of certain commodities. The government purchases and sells staple food grains of rice and barley through agricultural cooperatives. The government purchases these grains after harvest at pre-determined price and sells during the off-harvest season at a price usually lower than in the private market. Especially, when grain price rises to the level threatening to consumer's food budget the government interferes into the market through selling of government holding grains.

The prescribed goals of pricing policy on farm products are: increasing farm income, protection of consumers and price stabilisation. To some extent these goals conflict each other in implementation. The main objectives of the market operation of rice are price stabilisation and to increase farm income. Pricing policy on barley aims at increased production and farm income while protecting poor consumers. The government purchases barley at higher price after harvest and sells at lower price to the consumers. The price difference is subsidised by the government budget.

Also the government sets ceiling price on beef meat which is the most important source of animal protein in Korean diet.

ADMINISTRATIVE SYSTEM

Ministry of Agriculture and Fishery (hereafter MAF) is mainly responsible to the policy formulation on agriculture and fishery and the development planning. There are many Bureaus and institutions. Bureaus are:

1. Agricultural Planning, responsible to overall planning of agricultural development, agricultural budgeting and international cooperations;
2. Agricultural Statistics, responsible to collection and publication of data on agricultural production and farm incomes ;
3. Auditing;
4. Agricultural Development, responsible to formulation and implementation of Saemaul (New Village) income project, agricultural structural improvement and farm mechanisation;
5. Economic and Marketing, responsible to the marketing,

- export of farm products and agricultural credit;
6. Farmland, responsible to the reclamation, improvement, land administration and development project for special regions;
 7. Agricultural Production, responsible to production of rice and upland crops and the fertiliser and prevention of crop disease and insects;
 8. Agricultural Special Project, deals with planning and implementation on cash crops and other farm products such as special crops, horticulture, sericulture and other special products;
 9. Livestock, concerns to Korean native cattle, dairy cows, other livestock and sanitation of livestock;
 10. Food, Concerns to the planning of demand for and supply of food; and
 11. Food Administration, deals with storage, processing of food and administration of food.

There are other institutions subjecting to the direct control and supervision of MAF. They are National Silk Inspection Office in Seoul, National Farm Product Inspection Institute, National Livestock Inspection Station, National Farm Inspection Station, National Training Center for Civil Servants engaged in Agriculture and Fishery Industry, National Livestock Breeding Station, National Agricultural Economic Research Institute, National Silk Worm Station and National Seed Supply Institute.

In addition to the above bureaus and institutions there are large organisations dealing with agricultural extension and research, and policy on fishery.

Agricultural experiment, research and extension service are largely carried out by the Office of Rural Development (hereafter ORD). There are four bureaus, 11 research stations, 9 Provincial Office, 173 City and County Guidance Office under direct control and supervision of ORD. Four Bureaus in ORD main offices are Bureau of: Experimentation, Extension, Technology Diffusion, and Planning and Control. Eleven Research Stations are: Institute of Agricultural Science, Crop Experiment Station, Horticulture Experiment Station, Livestock Experiment Station, Institute of Agricultural Engineering and Utilisation, Institute of Veterinary Research, Alpine Experiment Station,

Yung Nam Crops Experiment Station, Ho Nam Crops Experiment Station and Jeju Experiment Station. In each province there is a provincial office of rural development which is a sub-organisation of central ORD. And also there is a guidance office in a county.

The research and experiment are conducted in various research institutes. The results are fed back to farmers through extension workers. The diffusion of technology is carried out through extension services. There are 8,944 research and extension workers as of 1976. Among them 859 persons are located in central ORD and the remaining 8,085 are located in province and county.

Office of Fishery administers the related problems of fishery and formulates policy on the development of fishing industry and for the increasing of incomes of fishery household. The office also conducts research on fishery. There are four bureaus. They are : Bureau of Planning and Administration responsible to planning, administration, auditing and statistical survey. Bureau of Fishery Development is responsible to the production and planning of ocean fishery and international cooperation. Bureau of Production is responsible to the planning and guidance of sea coast fishery. Bureau of Fishery Administration deals with the processing, marketing, cooperatives and exportation of fishery products. Bureau of Facilities deals with fishing boats, port and other facilities.

There are three subordinate institutes under Office of Fishery Development. They are National Fishery Development Institute, Fishery Inspection Centre and National Fishery Training Centre.

Although the MAF is mainly responsible to the rural and agricultural development planning, the Ministry of Home Affairs participates actively to the implementation and the administration of the planning through its vast organisation. There is one section in each provincial government and country exclusively dealing with agriculture and fishery. In this respect agricultural development is implemented by the MAF in collaboration with subordinate agencies of Ministry of Home Affairs.

Agricultural policy is formulated as an integrated part of the national economic development plan. Agricultural development plan is first formulated by the Bureau of Agricultural

Planning in collaboration with National Agricultural Economic Research Institute of the MAF. This plan is submitted to the Economic Planning Board in which the Five-Year Economic Development plan is to be finalised. All development plans submitted by various ministries are reviewed by the Economic Development Consulting Committee of Korea Development Institute. The Committee consists of experts from various professions and relevant government offices. When the plan is finalised, it is submitted to the cabinet meeting. After the plan is agreed upon by the cabinet meeting it will be implemented with the approval of the President of Korea.

INSTITUTIONAL INFRASTRUCTURE

There are governmental and sub-governmental institutions for the agricultural development. The governmental organisations are as have been explained in previous sections. The sub-governmental organisations are National Agricultural Cooperative Federation, Rural Development Corporation and Agricultural Development Corporation.

The agricultural cooperative is the largest organisation in institutional infrastructure for agricultural development. There were 1,545 primary coops with total of 1,917,000 members in the country as of 1974. Primary cooperatives in a county form a county cooperative. Also there are 227 special purpose cooperatives specialising into the livestock, fruits and other cash commodities.

The main functions of the agricultural coops are purchasing and selling of farm products and agricultural supplies and materials, agricultural finance, guidance and survey.

Agricultural coops purchase fertiliser, pesticide and farm implement from makers and distribute them to the members of the coops. Coops are also responsible to the operation of the government controlled grains of rice and barley. The coops purchase the grains from the producers and sell to the urban consumers to reduce the price variation of the grains. The coops also deal with the marketing of other cash commodities for the benefit of farmers.

The coops receive deposits and provide loans to the farmers. Most of the government investment fund and loans for the agricultural development are committed through agricultural

coops Agricultural coops also practice mutual insurance policy. Other functions of the coops are provision of guidance service to the members and, collection and analysis on the production and marketing of farm products.

Rural Development Corporation was established in order to facilitate the storage and processing of farm and fishery products. The corporation also intends to promote the exports of farm products Rural Development Corporation owns and operates farm product processing factories.

The main function of Agricultural Development Corporation is the land development. The activities of the corporation include the construction of irrigation dams, river basin development, re-arrangement of farm and the reclamation of the farmland. The corporation expands the farm land by the reclamation of hilly land and tidal flat.

All the three institutions recruit their employees through competitive examination.

Appendix 1

INDUSTRIAL ORIGIN OF GROSS NATIONAL PRODUCT IN KOREA AT 1970 CONSTANT
MARKET PRICES: COMPOSITION AND GROWTH RATE IN PER CENT

Year	(in billion won)									
	Amount			Composition			Growth Rates			
	GNP	Agriculture, Forestry & Fishery	Mining & Manufacturing	Social Overhead Capital & others	Agri. Forestry & others	Non-Agriculture	GNP	Agri.	Non-Agri.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
1965	1,529	603	237	690	39	61	6.1	-1.9	12.0	
1966	1,719	668	275	777	39	61	12.4	10.8	13.4	
1967	1,853	635	334	884	34	66	7.8	-5.0	15.9	
1968	2,087	650	417	1,020	31	69	12.6	2.4	18.0	
1969	2,400	731	500	1,169	30.5	69.5	15.0	12.5	16.1	
1970	2,589	725	591	1,274	28	72	7.9	-0.9	11.7	

(Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1971	2,827	748	690	1,388	26.5	73.5	9.2	3.3	11.5
1972	3,024	761	794	1,469	25	75	7.0	1.7	8.9
1973	3,523	803	1,036	1,684	23	77	16.5	5.5	20.2
1974	3,826	848	1,212	1,766	22	78	8.6	5.6	9.5
1975	4,108	900	1,355	1,853	22	78	7.4	6.2	7.7

SOURCE : The Bank of Korea, Economic Statistics Year Book, 1976.

1. Discrepancies are due to rounding errors.
2. Exchange rate is 483 won for one U.S. Dollar.

Appendix 2
GOVERNMENT INVESTMENT AND LOAN IN AGRICULTURE AND FORESTRY

	1966	1967	1968	1969	1970	1971	1972	1973	1974
	(in million won)								
Agriculture and forestry	13,702	13,482	26,918	43,276	39,425	46,240	52,865	58,779	108,938
Land base and irrigation	4,892	4,923	5,697	7,287	13,624	12,970	17,652	18,662	25,344
Production increase	2,195	1,806	2,537	7,548	7,782	7,130	3,123	5,668	7,947
Cash crops	85	64	117	1,018	859	1,490	1,114	1,868	1,038
Sericulture	490	294	933	2,457	1,279	1,272	1,198	967	632
Livestock	412	514	793	3,681	1,602	1,996	1,776	1,370	1,430
Cooperative activities	—	—	—	—	—	1,000	2,230	1,498	2,822
Mechanisation	—	—	—	—	—	2,363	3,152	662	217
Land reclamation	1,412	883	1,562	713	217	210	126	148	191
Water council	—	—	—	—	—	2,849	3,007	3,332	3,773
Guidance for viable farms	1,177	1,582	3,054	4,602	2,004	2,754	2,658	797	1,121
Environment improvement	—	—	—	—	—	—	3,000	7,745	7,088
Electrification Subsidy for Fertiliser	—	—	—	—	—	3,380	3,600	7,390	6,473

(Continued)

	1966	1967	1968	1969	1970	1971	1972	1973	1974
Research & extension*	757	835	1,058	2,102	1,622	2,134	2,230	—	—
Price stabilisation fund	—	—	5,100	5,298	3,400	2,500	—	—	—
Subsidy for interest rate differentials	—	—	85	350	744	1,260	1,719	2,153	2,350
Rural development corpn.	—	1,000	2,000	2,728	1,500	800	900	400	—
Forestry	1,082	1,581	3,621	3,792	3,692	3,995	4,480	5,129	6,112
Others*	1,200	—	300	1,700	1,100	500	900	1,000	42,400
Fishery	5,203	6,548	6,062	6,435	4,714	6,254	6,494	5,861	2,421
Total Agriculture, Forestry & fishery (A)	18,905	20,030	32,980	49,711	44,139	52,494	59,359	64,640	111,359
Total Government Investment & loans (B)	62,579	84,412	117,588	188,795	184,332	213,330	297,061	248,559	390,282
(A/B) in per cent	30.2%	23.7%	28.0%	26.3%	23.9%	24.6%	20.0%	26.0%	28.5%

*Includes subsidy for Fertiliser Account, subsidy to Agricultural Development Corporation and other investment.

Sung Hwan Ban

Saemaul Undong —New Community Movement

The Saemaul Undong was launched in 1971 based on pilot projects called the Saemaul Kaggugi Undong (New Village Cultivation Movement) carried out in 1970.

The Saemaul Undong was initiated as a comprehensive rural development programme including numerous projects aimed at increasing the income of farm and fishery households and improving their living conditions. The Saemaul Undong evolved from President Park's long cherished desire to transform the tradition-bound, stagnant rural sector into modern, progressive and hopeful communities. His sincere concern about the living conditions of the rural people and his strong commitment to modernisation, together with the active participation of civil servant has led the movement to be fruitful, and to avoid the difficulties which resulted in the termination of earlier rural development efforts.

The Saemaul Undong is a programme for making a village a better place to live through the villager's own efforts to create a better environment and to raise the standard of living. To achieve this goal, three mutually inter-related aspects of the programme are emphasised: spiritual enlightenment, improvement of the living environment and increased income.

The achievements brought about by the Saemaul Undong have been enormous. Numerous projects and programmes have been completed and others are still underway. In spite of the difficulty of separating the net effect of the Saemaul Undong from that of more general development policies, the performance of the movement can be measured approximately based on

the official assessment of the monetary value of the various projects and the labour participation.

During the past five years from 1971 to 1975 total gross investment through Saemaul Undong was 560.6 billion won (about 1,181.4 million U.S. dollars) of which 225.0 billion won or 39.4 per cent was supported by the governmental agencies in the form of subsidy and loan. The remaining was contributed by the villagers in the forms of labour force, land and cash. Approximately 332,212 thousand man-days of labour was participated to the movement for the past 5 years. It means annual participation of 66,442 thousand man-days. About 93 per cent of 34,665 total villages were involved in this movement. In addition to the participation by rural community a large number of urban residents are involved in the movement.

GOALS OF SAEMAUL UNDONG

In the Fourth Five-Year Economic Development Plan, primary goals of Saemaul Undong are:

1. The completion of environmental improvement projects;
2. Implementation of extensive Saemaul education;
3. Improving the living standards of rural people; and
4. Increasing income

In the earlier years of movement a higher policy priority was placed upon the spiritual enlightenment and the improvement of the environment. For the successful achievement of the movement's goals high policy priority has been placed upon inducing attitudinal change. Specifically, the objective has been to inculcate greater industriousness, greater self-reliance, greater cooperativeness, and a positive attitude toward self-improvement.

On the physical development side prime emphasis has consistently been placed upon improvement of the environment. The movement attempted to improve the household environment, the village environment and the national environment. Relevant projects include the construction of clean and sanitary villages, the expansion and opening of village roads or farm feeder roads. The environmental upgrading of households includes the replacement of straw thatch roofing by slate or ceramic tile, upgrading toilet facilities and the sewage disposal systems, and repairing and modernising kitchens, and fences. The

movement also aims at changing inefficient and wasteful traditional social customs and dress to more frugal and convenient forms.

However, the basic goal of the movement is increasing the well-being and raising the living standard of rural people (and, to a lesser extent, urban people). This goal can be attained by continuous growth of income streams. In this respect increasing income holds key to the long-run success of the movement.

Recognising this fact, since the Saemaul Undong for 1973 (October 1972-May 1973) the policy emphasis has been shifting from environment improvements to increasing income. Specifically, the new policy is to link attitudinal change, environment improvement, and income growth.

The shift of policy emphasis has been reflected in the allocation of gross investment for the Saemaul Undong. Gross investment to the projects aiming at expansion of the production base and income augmentation accounted for slightly over 30 per cent of total gross investment of 133 billion won for the Saemaul Undong in 1974. However, the gross investment for the construction of production base and income argumentation programmes accounted for 21.5 and 36.4 per cent respectively, to total gross investment for the 1975's Saemaul Undong.

To attain the goal of raising the incomes of farm households several measures are being undertaken simultaneously. Increased production of farm products particularly of rice and barley which are the staple food grains of Korea, have received a great emphasis. Efforts to increase the incomes of farm households by increasing production of foodgrains are compatible with the national goal of attaining self-sufficiency in food grains.

The following measures are being taken to increase production:

1. Expansion of the production base: this includes extension of irrigation facilities, rural electrification, upgrading land fertility, improvement of agricultural marketing facilities and systems, and intensive utilisation of arable land.

2. Establishment of a cooperative farming system: this includes collective cultivation of rice, joint operation during

peak seasons, and cooperative efforts to control pests and disease.

3. Introduction of a cooperative production system: this includes establishment of an experimental farm village and joint livestock and fish production.

4. Development of off-farm income sources: this includes reforestation projects, production of nursery stock of various tree crops, the establishment or inducement of manufacturing factories in the rural area (these referred to as Saemaul Factories), and the expansion of wage employment.

Major Goals for the 4th Five Year Economic Development Planning Period

Programmes for increasing income will receive the highest policy priority in the rural development planning in the 4th Five-Year Economic Development Plan. Although Saemaul Undong is a comprehensive rural development programme including numerous projects aimed at increasing the income of farm and fishery households and the improvement of environment of farms and villages, the conventional agricultural development programmes are being listed in the section on agriculture and fishery. Therefore, this section deals with the rural development programmes which are expected to implement exclusively as Saemaul Undong.

Table 1 shows the plan of various projects for the 1976-81. As of 1975, 41,458 kilometers of rural road was being constructed. Additional 7,709 kilometers of rural road will be constructed leading to total road construction of 49,167 kilometers by 1981. About 1,643 thousand households or 64.9 per cent of total rural households of 2,532,000 were having access to electricity as of 1975. By 1978 all households will be electrified. Approximately 56 per cent or 10,429 villages of 16,633 statutory villages have communication network facilities as of 1975; it is planned to instal communication networks to all these statutory villages by 1978.

There are only, 4,552 water supply works in 1975. It is planned to instal additional 23,587 water supply works by 1981. The plan calls for the improvement of the roofings of 2,075,000 buildings by 1977. However, 70 per cent or 1,595,000

TABLE 1
GOALS TO ACHIEVE BY 1981 FOR MAJOR PROJECTS

<i>Projects</i>	<i>Goals to Achieve by 1981 (A)</i>	<i>Planned for 1976-1981</i>	<i>Status as of 1975 (B)</i>	<i>Percent of 1975 to 1981</i>	<i>Completed by</i>
Rural road (km)	49,167	7,709	41,458	84.3	1981
Rural electrification (1,000 households)	2,532	889	1,643	64.9	1978
Rural communication (village)	16,633	6,204	10,429	56.0	1978 for Statutory villages
Water supply works (projects)	28,139	23,587	4,552	16.0	1981 for villages in which more than 20 households are feasible to instal
Improvement of roofs (1,000 bldgs.)	2,075	480	1,595	76.9	1977
Village halls (bldgs.)	35,608	8,557	27,051	76.0	1980
Common use warehouse (bldgs.)	34,665	21,407	13,258	38.2	1980
Public workshops	34,665	31,893	2,772	7.9	1980

of them are already being improved by 1975. Therefore 480,000 buildings will be having roofings by replacement with slate or ceramic tile for straw thatch roof by 1977.

Through Saemaul Undong a large number of village common use facilities are being constructed: 27,051 buildings of village halls, 13,258 buildings of common use warehouses and 2,772 places of public workshop as of 1975. These projects will be continued during the Fourth Five Year Economic Development Planning period. It has planned to build 8,558 units of village halls, 21,407 buildings of village common use warehouse and 31,893 public workshops during the 1976-1980 period.

Investment Plan

Although a great policy emphasis has been placed upon increasing income of rural households in Saemaul Undong, conventional agricultural programmes are included in agricultural and fishery section. Therefore, this section covers only the projects which are exclusively carried out as Saemaul Undong,

As can be seen in Table 2 total of 772 billion won will be invested for the implementation of Saemaul projects for the planning period of 1977 to 1981. A large proportion of the total investment fund will be allocated to the construction of Saemaul factories and the improvement of rural housing. It plans to build 500 Saemaul factories to be located in rural area by investing 236 billion won which is equivalent to 30.6 per cent of total investment for all the Saemaul projects. Also the rural housing improvement project will receive a large proportion of total investment. It plans to improve roofings of 330,000 buildings and 100,000 rural houses and to construct 190,000 units of new rural houses by investing 250 billion won during the planning period. This accounts for 32.4 per cent of total investment for all the Saemaul Projects. Standard village cultivation programmes will be carried out to 59,000 villages by investing 132 billion won which is equivalent to 17.1 per cent of total investment for all the Saemaul projects.

By the successful implementation of the income increasing programmes it is expected that per farm income will reach to 1,447,000 won at 1975 constant price at the end of planning period. Furthermore, the appearance of the rural community

TABLE 2
INVESTMENT PLAN FOR SAEMAUL UNDONG

<i>Projects</i>	<i>Physical quantity</i>	<i>(billion won at 1975 Prices)</i>	
		<i>Amount, billion won</i>	<i>Per cent</i>
<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
Saemaul Project, total		772	100.0
Improvement of marketing facilities	Village buying and selling place (32,824 units)	22	2.9
Establishment of rural subsidiary business area	Selling place (1,499 units)		
Construction of Saemaul factory	400 areas	4	0.5
Construction of rural road	500 units	236	30.6
Rural electrification and communication network	6,487 km	18	2.3
	Electrification 585,000 households		
	Communication 9,204 villages	67	8.7

(Continued)

(1)	(2)	(3)	(4)
Improvement of rural housing	Roof improvement, 330,000 bldgs. House improvement, 100,000 bldgs. House construction, 190,000 bldgs.	250	32.4
Water supply works	20,427 places	43	5.5
Rural standard village cultivation	59,000 villages	132	17.1

will change substantially by the improvement of houses, construction of infrastructure including transportation and communication networks and other facilities which are necessary in modernised way of living.

Ahmad Sarji bin Abdul Hamid

Management of Agriculture in Malaysia*

A. SOCIO-ECONOMIC ENVIRONMENT

Malaysia which comprises Peninsular Malaysia, Sabah and Sarawak has a total land area of 81.7¹ million acres. The 47 per cent of this (38.4 million acres) was estimated to be suitable for agriculture. By the end of 1973, the area under agricultural use was 8.7 million acres.

The population of Malaysia in 1966 was 9.7 million² and in 1975, it was estimated at 12.2 million. About 85 per cent live in Peninsular Malaysia, 6 per cent in Sabah and 9 per cent in Sarawak.³ The average annual growth rate of the population during the 2nd Malaysia Plan period was 2.7 per cent.⁴

Progress in the Economy, 1966-1975

The last decade (1966-1975) covered the period of the 1st Malaysia Plan (1966-1970) and the 2nd Malaysia Plan (1971-1975). The economy has expanded satisfactorily over this period as indicated by the growth of the country's Gross National Product (GNP) Table 1.

*The contents of this paper are almost entirely the output of research undertaken by Mr. Chung Kek Win, my Assistant Director (Planning, Research and Evaluation) and his officers.

¹"Report of the Government of Malaysia to the Food and Agriculture Organisation of the United Nations, 1973-1975", Ministry of Agriculture and Rural Development, Malaysia, 1975.

²Population Census, 1970.

³3rd Malaysia Plan, 1976-1980.

⁴Mid-Term Review of the 2nd Malaysia Plan 1971-1975.

TABLE 1
GROSS NATIONAL PRODUCT BY DEMAND AGGREGATES

(at current market prices \$ million)

<i>Year</i>	<i>GNP (absolute figures)</i>	<i>Per cent change</i>
1966	9,229*	
1967	9,654*	+ 4.6
1968	10,071	+ 4.3
1969	10,978	+ 9.0
1970	11,473	+ 4.5
1971	11,766	+ 2.6
1972	12,722	+ 8.1
1973	16,224	+ 27.5
1974	19,696	+ 21.4
1975**	20,160	+ 2.4

SOURCE: "Economic Report, 1975-76", The Treasury, Malaysia—Appendix 1.1.

*2nd Malaysia Plan, 1971-75.

**Estimates by Inter-Agency Planning Group (IAPG).

AGRICULTURE IN THE MALAYSIAN ECONOMY

Agriculture remains the mainstay of the Malaysian economy, although its share of the GDP has declined from 32 per cent in 1968 to 33 per cent in 1975, as indicated in Table 2.

The decline was due to the recessionary conditions in the industrialised countries especially during the early part and towards the end of the 2nd Malaysia Plan (1970-75). The growing importance of the other sectors of the economy such as transport and manufacturing, has also contributed to this decline. The annual rate growth of the agriculture, forestry and fishing sector had been rather cyclical over the past decade (Table 2), following closely to the swings of demand and production in the industrial countries. This was because key

TABLE 2
GROSS DOMESTIC PRODUCT BY INDUSTRIAL ORIGIN

Year	GDP at factor cost		Agriculture, forestry and fishing		Mining and quarrying		Manufacturing		Construction		Electricity and Other Services*		(in current price \$ million)
	absolute figure	% change	absolute figure	% change	absolute figure	% change	absolute figure	% change	absolute figure	% change	absolute figure	% change	
1968	2692		2793		476		995		347		225		3856
% Share in Total (1968)	100%		32%		6%		11%		4%		3%		44%
1969	9636	+ 10.9	3274	+ 17.2	546	+ 14.7	1213	+ 21.9	351	+ 1.2	240	+ 6.7	4012 + 4.0
1970**	10238	+ 6.2	3383	+ 3.3	580	+ 6.2	1354	+ 11.6	384	+ 9.4	254	+ 5.8	4283 + 6.8
1971**	10455	+ 2.1	3350	- 1.0	546	- 5.9	1322	- 2.4	414	+ 7.8	266	+ 4.7	4557 + 7.11
1972**	11191	+ 7.0	3349	0	566	+ 3.7	1450	+ 9.7	486	+ 17.4	303	+ 13.9	5037 + 10.5

1973**	14349	+ 28.2	5040	+ 50.5	561	— 0.9	2006	+ 38.3	657	+ 35.2	352	+ 16.2	5733	+ 13.8
1974**	17047	+ 18.8	5900	+ 17.1	900	+ 60.4	2500	+ 24.6	745	+ 13.4	410	+ 16.5	6592	+ 15.0
1975**	17870	+ 4.8	5597	— 5.1	798	— 11.3	2875	+ 15.0	836	+ 12.2	474	+ 15.6	7290	+ 10.6

% Share in Total (1975)	100%	31%	4%	16%	5%	3%	11%
----------------------------	------	-----	----	-----	----	----	-----

SOURCE: "Economic Report, 1975-76", The Treasury, Malaysia-Appendix 1.2.

*Including transport, communication, trade, banking, insurance,
public administration and dwellings.

**Estimates by IAPG.

commodity exports such as rubber, tin and timber accounted for two-thirds of the total commodity exports.

Employment by Sector

Malaysia is characterised by an uneven pattern of population distribution. This is observed between Peninsular Malaysia on the one hand and Sabah and Sarawak on the other and between the East and West coasts of Peninsular Malaysia. The population is mainly concentrated in the rural areas and the percentage of urban population in Peninsular Malaysia in 1970 was only 28.7 per cent⁵.

The distribution of population by occupation is shown in Table 3. Over the decade, for most of the years, agricultural sector employed more than half the working population in Peninsular Malaysia. Towards the end of the 2nd Malaysia Plan, its share towards total employment however declined. This was because of the effects of a fall in the prices of the country's major export commodities and the growing importance of the other sectors especially the manufacturing sector. In 1975, the agricultural sector accounted for 46.2 per cent of total employment. The manufacturing sector set the pace for employment creation with a rate of 6.6 per cent⁶ per annum during the 2nd Malaysia Plan period. The commercial and services sector contributed 43.6 per cent of total new employment, while the agriculture and the manufacturing sectors accounted for 25.5 per cent and 18.4 per cent respectively.

Income Distribution in Urban and Rural Sector

Wide inequalities in the distribution of income exist in most developing societies. In Peninsular Malaysia itself, data on the distribution of income indicated that inequalities exist among all racial groups and the different sectors of the economy. One measure of the difference in income levels in the country in 1970 is a comparison of mean household incomes in Peninsular Malaysia. In comparison with a mean monthly household income of \$264⁷ for the country as a whole, the rural average was only \$ 200 while the urban average was \$ 428. The Post-

⁵Third Malaysia Plan, 1976-80.

⁶*Ibid.*

⁷*Ibid.*

Enumeration Survey of the 1970 Population Census revealed that as much as 49.3 per cent of all households in Peninsular Malaysia received incomes less than the poverty line of \$140 per household per month in 1970.⁸ Out of a population of 1.6 million households, some 792,000 were poor. The bulk of these was in the rural areas with rural households numbering 684,000 (86 per cent of all households in poverty) and urban households amounting to 108,000 (14 per cent).

TABLE 3
PENINSULAR MALAYSIA EMPLOYMENT: BY SECTOR,
1965-1970 and 1975

Sector / Items	1965		1970		1975	
	Total (^{'000})	% of Total Employ- ment	Total (^{'000})	% of Total Employ- ment	Total (^{'000})	% of Total Employ- ment
Agriculture, forestry and fishing	1350	52.1	1406.0	50.3	1534.3	46.2
Mining and quarrying	66	2.5	85.3	3.0	83.7	2.5
Manufacturing	217	8.4	263.9	9.4	362.8	10.9
Construction	90	3.5	77.6	2.8	97.4	2.9
Utilities	16	0.6	16.6	0.6	21.4	0.7
Transport, storage and communications	101	3.9	119.4	4.3	161.0	4.9
Commerce	287	11.1	350.9	12.6	459.8	13.9
Services	463	17.9	474.0	17.0	596.8	18.0
Total Employment	2590	100.0	2793.7	100.0	3317.9	100.0

SOURCE: 2nd Malaysia Plan, 1971-75, p. 98, Table 7-1

3rd Malaysia Plan, 1976-80, p. 142, Table 8-2

Some 74 per cent of the poor earned their livelihood from agriculture and the processing of agricultural products—the majority of whom were small farmers and agricultural labourers

⁸The poverty line is defined to cover minimum food requirements and minimum needs with respect to clothing, housing, consumer durable goods and transport services to sustain a decent standard of living (3rd Malaysia Plan, p. 5).

(including estate workers). Those located in the rural areas but employed outside agriculture were mainly small traders and artisans and constituted 16 per cent of all the poor and 18 per cent of the rural poor. Thus, the incidence of poverty was the highest in agriculture (68 per cent), with all other sectors in the economy showing much lower incidences ranging between 20 per cent to 40 per cent.

Evaluation of the quantitative dimensions of poverty in Sabah and Sarawak is hampered by lack of statistical information. *Prima facie* evidence suggests, however, that while the absolute number of households in poverty in these two states is much less than in Peninsular Malaysia, the incidence of poverty is probably much higher. This is due mainly to the significantly larger proportion of the population in agriculture which is characterised by lower yields than those found in Peninsular Malaysia

System of Land Ownership

One of the major factors contributing to the low income of farmers is their small farm size. This is especially true among paddy growers. In West Malaysia, paddy is cultivated in small farms averaging 2 to 5 acres. The average paddy farm area for the whole country is 3.1 acres. Table 4 shows that 33 per cent of the total number of farms are below 2 acres while only 22 per cent exceed 5 acres. Thus, almost one-half (45 per cent) of the paddy farm of West Malaysia fall within the size range of 2 to 5 acres.

Another common feature prevailing in the paddy growing areas is that many farmers have fragmented holdings and cultivate two or more pieces of paddy land. In 1960 Census of Agriculture showed that for paddy farmers, 56 per cent of them operated a single parcel*, 25 per cent worked on two parcels, 11 per cent on three parcels, 4 per cent on four parcels and the remaining 4 per cent worked on 5 to 10 parcels.

It is estimated that 60 per cent of the paddy lands in West Malaysia are operated by the owners themselves while the

*A *Parcel* was defined as land entirely surrounded by land of other farmers or by land not forming part of any farm, e.g., forest, river, etc., and may consist of a whole grant of land, only part of a grant or several grants.

remaining 40 per cent is rented out to tenant farmers in some form or other such as fixed rent in cash, fixed rent in paddy, crop-sharing or lease of the paddy lands.

About half of the paddy farmers in West Malaysia are owner farmers while tenant-farmers constitute 27 per cent. Farmers who own part of their paddy land and rent the balance form 25 per cent of the total paddy farmers.

TABLE 4
SIZE DISTRIBUTION OF PADDY FARMS

State	Average Paddy Area (in acres)	% Farms in various size Groups (in acres)							
		Below 1	1— 1.99	2— 2.99	3— 3.99	4— 4.99	5— 7.49	7.5 9.99	10 & above
Johore	1.5	5	60	27	3	3	2	0	0
Kedah	4.0	8	19	19	12	10	20	6	6
Kelantan	2.3	8	26	32	16	10	7	1	0
Malacca	2.1	21	32	24	7	6	7	2	1
N. Sembilan	1.1	38	36	19	4	3	0	0	0
Pahang	1.7	16	38	26	11	5	3	1	0
Penang & P. Welesley	2.5	9	31	23	13	11	11	2	0
Perak	2.6	14	26	19	12	9	15	4	1
Perlis	4.1	3	11	19	16	13	25	8	5
Selangor	3.6	3	14	5	40	13	18	5	2
Trengganu	2.3	14	23	29	11	10	10	3	0
P. Malaysia	3.1	10	23	21	14	10	15	4	3

SOURCE : S. Selvadurai, Paddy Farming in West Malaysia, 1972.

Major Crops, Acreage and Production

The variety of crops grown are very diverse, with most of the perennials being cultivated as export crops and the annuals and biennials as import substitution and food crops for domestic consumption. A breakdown of the acreage of the various crops grown in Peninsular Malaysia over the past decade is shown in Table 5.

TABLE 5
CROP ACREAGE IN PENINSULAR MALAYSIA, 1966-1975

Year	Items	Rubber		Paddy	Coconut		Oil Palm	Fruits	Spices	Beverages	Food Crop	Miscellaneous	Total Crop Acreage		
		Estates	Small-holdings		Estates	Small-holdings									
1966		1813	2571	4384	1053	63	443	506	304	157	21	24	97	39	6585
1967		1746	2603	4349	1087	60	444	504	401	163	19	23	110	36	6692
1968		1676	2608	4248	1183	57	460	517	496	168	6	24	107	47	6796
1969		1639	2637	4276	1241	55	467	522	597	160	6	26	106	42	6976
1970		1598	2662	4260	1318	55	472	527	675	169	6	29	117	43	7144
1971		1561	2684	4245	1365	53	470	523	769	161	6	39	111	44	7263
1972		1508	2698	4206	1414	51	471	522	887	171	7	51	120	53	7331
1973		1457	4729	6186	1462	47	485	532	1036	170	7	63	119	46	9621
1974		1430	N.a	N.a	1476	N.a	N.a	N.a	N.a	189	7	73	115	44	N.a
1975		1399	N.a	N.a	N.a	N.a	N.a	N.a	N.a	N.a	N.a	N.a	N.a	N.a	N.a

SOURCE : Monthly Statistical Bulletin of West Malaysia, 1976, Department of Statistics, Malaysia, Kuala Lumpur.

Rubber remains the principal crop grown in Peninsular Malaysia with an acreage 6.2 million acres in 1973 of which 76 per cent were found in the small holdings sector.

Over the past decade, the production of rubber has been much affected by the pace of production in the industrial countries. This is clearly indicated by the cyclical nature of the annual rate of growth of output of rubber (Table 6). Output of rubber in the last three years has declined by 1.1 per cent between 1973 and 1974 and is further forecast to drop by another 8.9 per cent between 1974 and 1975. The estimated total production of rubber in Malaysia in 1975 is expected to be 1.4 million tons. The decline in output in 1974 and 1975 was due to the sharp fall in price from as 1974 a consequence of slackening of demand for the commodity in the industrialised countries.

In Sabah and Sarawak, rubber production increased from 53,000⁹ tons in 1970 to 60,000 tons in 1975. The decline in rubber prices was responsible for the slow growth as many tappers chose to find other remunerative employment. The total acreage increased from 732,000 in 1970 to 748,000 in 1975.

The area under *oil palm* is expected to continue to increase in the near future. The estimated acreage in 1975 is 1.4 million¹⁰ acres, thus making oil palm the second most important crop in Malaysia in terms of area planted. Between 1973 and 1975, the area devoted to the crop had increased by 39 per cent. Over the decade, production of palm oil and kernel continued to increase, although in certain years it is affected by a fall in demand from industrial countries. Between 1972 and 1973, production of palm oil and kernel dropped sharply due to a drought in 1973. Output for 1975 is forecast to be around 1.6 million tons. Sarawak became a producer and exporter of palm oil for the first time in 1974.

Rice is the staple cereal food of the people in Malaysia. Consequently, the cultivation of paddy is of vital significance to the national economy. In 1974, the area devoted to wet

⁹Third Malaysia Plan, 1976-1980.

¹⁰Report of the Government of Malaysia to the FAO of the United Nations 1973-1975. Ministry of Agriculture and Rural Development, Malaysia, 1975

paddy growing in Peninsular Malaysia totalled 0.92 million acres¹¹ of which about 58.5 per cent are double cropped. Another 23,000 acres are used for dryland paddy cultivation. Domestic production of paddy increased from 1.1 million tons in 1975 (Table 6). It accounted for about 87 per cent of domestic requirements of rice. In Sabah and Sarawak, the acreage under paddy remained small due to the limited availability of suitable areas for paddy cultivation. In 1975, 118,000¹² were planted with paddy in Sabah and 336,000 acres in Sarawak. Double-cropping acreage in Sabah, however, increased from 4,500 in 1970 to 9,000 in 1975.

The *coconut* industry in Malaysia has been on the decline for the last fifteen years such that it is now essentially a small-holder crop. The area planted with coconuts in Malaysia in 1973 came to 532,000 acres (Table 5). Production of coconut oil also showed a rapid decline from 1971.

The total area under *pepper* in 1974 came to 26,000¹³ acres. Malaysia is expected to maintain her position as the world's leading pepper exporter with the implementation of various schemes to help pepper growers, especially in Sarawak.

Sugar cane has recently become significant with the establishment of a number of large plantations and sugar processing projects. An estimated 45,000¹⁴ acres are being cultivated under this crop, which is grown for substitution.

Tapioca is grown as a minor export crop. The production and export of tapioca flour, pearls and chips constitute an important agro-based industry in some states of Peninsular Malaysia.

The cultivation of *groundnuts*, *vegetables* and local *fruits* are being promoted and encouraged among small farmers. *Cocoa* has developed into a thriving export crop and its cultivation is becoming very popular among coconut small holders as an intercrop of high potential. *Tobacco* is grown as an intercrop and as an off-season crop by many paddy farmers.

¹¹Monthly Statistical Bulletin of West Malaysia, 1976. Department of Statistics, Malaysia, Kuala Lumpur.

¹²Third Malaysia Plan, 1976-1980.

¹³Report of the Government of Malaysia to the FAO of the United Nations, 1973-1975, *op. cit.*

¹⁴*Ibid.*

TABLE 6
PRODUCTION OF MAJOR CROPS, MALAYSIA, 1966-1975, '000 tons*

Year	Items	Rubber**		Palm Oil and Kernel		Pepper		Coconut Oil		Rice	
		absolute figure	% change	absolute figure	% change	absolute figure	% change	absolute figure	% change	absolute figure	% change
1966		927.9	+ 6.8	233.8	+ 18.3	14.2	+ 44.4	87.7	+ 2.9	796.1	- 2.7
1967		991.0	+ 11.0	276.5	+ 25.0	20.5	+ 16.6	90.2	+ 5.7	774.7	+ 19.7
1968		1100.4	+ 15.2	345.9	+ 24.3	23.9	+ 25.9	95.3	- 8.0	927.7	+ 11.5
1969		1268.2	+ 0.1	429.5	+ 21.9	30.1	- 14.3	87.7	+ 9.1	1034.2	+ 5.2
1970		1269.3	+ 4.3	523.6	+ 36.6	25.8	+ 9.7	95.7	+ 4.6	1087.9	+ 7.0
1971		1324.5	- 1.5	715.2	+ 22.7	28.3	- 2.5	100.1	- 4.0	1164.0	+ 2.5
1972		1304.4	+ 20.1	877.8	+ 12.4	27.6	- 12.9	96.1	- 14.3	1192.8	+ 7.3
1973		1566.8	- 1.1	987.2	+ 26.2	24.0	+ 23.8	82.4	- 15.2	1281.0	+ 4.1
1974		1549.4	- 8.9	1246.1	+ 25.5	29.7	+ 6.4	69.9	- 9.9	1333.0	+ 2.5
1975+		1410.0		1564.0		31.6		63.0		1366.0	

SOURCE: Economic Report, 1975-1976, The Treasury, Malaysia, Appendix 8.1.

*All weights in Metric Units—unless otherwise stated.

**Includes both estates and small holdings. Production for both Sabah and Sarawak were estimated from exports.

+Estimates by The Treasury's Economic Division.

Agricultural Exports

Exports provided the main thrust of economic growth during the boom years of 1973 and to a lesser extent, 1974. International prices of raw materials were favourable and the prices of Malaysia's major primary commodities such as rubber and palm oil reflected this trend.

It is estimated that export earnings increased by 37.6 per cent,¹⁵ with gains from the terms of trade amounting to about 10 per cent of GNP in 1973. The agricultural sector was a natural beneficiary of these developments. Real value added in agriculture rose by 14.0 per cent in 1973 in contrast to the 3.0 per cent recorded in 1971 to 1972. Output and income in the smallholding sector of agriculture increased at an even faster rate than the overall expansion of the agricultural sector itself, thus resulting in substantial gains in purchasing power for a large number of poor rural households.

The export structure of the economy underwent continued transformation between 1970 and 1975. More than 56 per cent of total exports in 1970 (with, among others, 33.4 per cent from rubber, 16.3 per cent timber, and 5.1 per cent from palm oil) came from the agricultural sector as against 22.6 per cent from mining and 11.4 per cent from manufacturing, including canned pineapple and petroleum products. However, by 1975, agriculture accounted for only 49.5 per cent.

Table 7 shows the export volumes of the principal agricultural products. Over the past ten years, the export volume of rubber showed a rather slow growth. Between 1966-70 its average annual growth was 6.8 per cent; this dropped to 1.4 per cent between 1971-75. This sharp drop was due to the recession in the industrial countries during 1974 and 1975.

Palm oil exports, which constituted about 11 per cent of total merchandise exports in 1974, are estimated to increase to 1,026 million tons in 1975. This is mainly due to the favourable overseas demand. Palm oil is also expected to be the second biggest exports earner after rubber for Malaysia in 1975. In the first half of the year, it accounted for 17 per cent¹⁶ of total merchandise exports.

¹⁵Third Malaysia Plan, 1976-1980.

¹⁶Economic Report, 1975-76, The Treasury, Malaysia.

TABLE 7
PRINCIPAL AGRICULTURAL EXPORTS
(1966-1975)

('000 long tons)

Year	Items					
	Rubber	Palm Oil	Palm Kernel/ Palm Kernel Oil*	Pepper	Copra	Coconut Oil
1966	997.1	181.7	23.3	14.4	39.1	27.9
1967	1026.9	185.9	24.9	20.7	16.6	32.1
1968	1153.1	281.1	35.0	24.1	18.6	42.2
1969	1333.5	348.9	38.0	30.3	18.5	28.9
1970	1324.1	393.8	26.6	25.9	15.3	47.5
1971	1368	564	5	28	—	—
1972	1343	686	48	27	—	—
1973	1613	785	65	24	—	—
1974	1545	887	91	30.2	—	—
1975						
Average annual growth rate (%)						
1966-70	1417	1026	104	32.5	—	—
Average annual growth rate (%)						
1971-75	6.8	22.8	7.3	6.6	— 17.7	18.9

SOURCE: (i) Second Malaysia Plan 1971-1975.

(ii) Third Malaysia Plan 1976-1980.

*Palm kernel oil is exported between 1971-75, after the emergence of a palm kernel oil extracting industry.

The total Malaysian export volume of pepper is estimated to increase by 7.5 per cent in 1975 to 32,500 tons from 30,200 tons in 1974. In terms of value, the export earnings from

increased by 2.8 per cent¹⁷ to about \$109 million in 1975 from \$106 million in 1974. Pepper is still the third largest foreign exchange earner in Sarawak and the state produces about 90 per cent of Malaysian pepper. About 85 per cent of Malaysian pepper is exported through Singapore while 15 per cent is exported directly to Japan and Germany.

The exports of copra and coconut oil have been on a decline over this period. In fact, for copra, the average annual growth rate showed a decline of 17.7 per cent between 1966-70 while that of coconut oil showed an increase of 18.9 per cent.

Agricultural Imports

Agricultural imports in 1973 were valued at \$1,100.7 million, or 21.4 per cent of the total imports. Food and feed products accounted for \$ 911.0 million. The major items in the import bill were cereals, sugar, and daily products (see Table 8).

AGRICULTURAL DEVELOPMENT POLICIES AND STRATEGIES

Government Expenditure in Agriculture

Government expenditure for agriculture and rural development accounted for 26.3 per cent (\$1.1 billion) of total public development expenditure under the First Malaysia Plan (1966-1970). Emphasis was given to land development (8.6%), drainage and irrigation (8.1%) and rubber replanting (4%). Development expenditure for these three programmes accounted for more than three-fourths of public development expenditure on agriculture during this period.

It can be seen that there was a big shift from the sole *in situ* development approach to a complementary land development *via* the opening of new lands. From 1956-60, only \$17 million was spent on land development. This increased to \$130 million during 1961-65, and \$ 310 million in 1966-70 (First Malaysia Plan, an additional \$ 54 million was spent on land development in East Malaysia during this period).¹⁸

¹⁷*Economic Report, 1975-76*, Treasury, Malaysia.

¹⁸2nd Malaysia Plan, 1971-75, p. 11.

TABLE 8
VALUE OF PRINCIPAL AGRICULTURAL IMPORTS
PENINSULAR MALAYSIA 1972-1973

<i>Item</i>	<i>1972</i>	<i>1973</i>
Live	5,931,200	4,165,000*
Meat	19,420,100	20,904,400
Dairy products	97,696,000	119,465,800
Fish	44,833,600*	52,317,200*
Cereals	170,324,200	298,695,900
Fruits and vegetables	84,588,800	95,173,400
Sugar	147,245,200	170,716,900
Coffee, tea, cocoa and spices	27,975,800	34,828,000
Feeding stuffs	67,448,200	71,432,200
Eats and oils	39,954,300*	54,578,800*
Beverages	25,061,300	39,425,200
Food preparations	10,158,400	12,296,400
Tobacco manufactured and unmanufactured	28,186,800*	38,669,500*
Hides and skins	1,097,800*	465,700*
Natural fibres	26,472,300	43,372,100*
Fertilisers (crude and manufactured)	54,935,600	79,093,100
Tractors	22,416,000	17,227,900
Other agricultural machinery	10,869,700	11,315,700
Agricultural Chemicals	8,621,400	11,919,900

*Indicates that exports in the commodity group exceeded imports for that year.

SOURCE : *Statistical Digest 1973*, Ministry of Agriculture, Peninsular, Malaysia, Kuala Lumpur, 1975.

A total of \$2.1 billion (21.7 per cent of total public development expenditure) was expended for agricultural development during the 2nd Malaysia Plan (Table 9). Emphasis was again given to land development which accounted for 12.7 per cent.

TABLE 9
PUBLIC DEVELOPMENT EXPENDITURE IN AGRICULTURE AND ALLIED
INFRASTRUCTURE, 1966-1968

Item Sector	(\$ million)					
	1966-1970 (Estimated)		1971-1975 (Estimated)		1976-1980 (Allocation)	
	Total	%	Total	%	Total	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Agriculture and Rural Development</i>	111.41	26.3	2129.09	21.7	4735.54	25.5
Agriculture	96.8	2.3	212.23	2.2	496.74	2.7
Rubber Replanting	168.9	4.0	158.41	1.6	674.94	3.6
Land Development (FELDA, FELCRA, Youth Land Schemes, Public Estates)	363.6	8.6	1139.18	11.6	2009.69	10.8
Drainage and Irrigation	342.6	8.1	271.09	2.8	621.03	3.3
Forestry	14.9	0.4	30.77	0.3	55.47	0.3
Animal Husbandry	18.5	0.4	69.72	0.7	179.01	1.0
Fisheries	9.0	0.2	31.98	0.3	275.73	1.5

Agriculture Credit and Marketing (Bank Per-
tanian, FAMA, Cooperatives, Paddy Board
and Rural Credit)

Agriculture Research (MARDI and Division
of Food Technology)

Others

29.6	0.7	132.07	1.3	294.82	1.6
13.0	0.3	28.60	0.3	60.58	0.3
57.2	1.3	55.04	0.6	67.53	0.4

Total Public Development Expenditure	4242.4	9820.85	18,554.98
--------------------------------------	--------	---------	-----------

SOURCE: Second Malaysia Plan, 1971-1975, p. 68, Table 5-1. Third Malaysian Plan, 1976-1980, p. 240, Table 12-3.
*% share of Total Public Development Expenditure.

Current Policy Objectives

Malaysian agricultural policies are guided by the New Economic Policy (NEP) which is a socio-economic policy designed to achieve national unity through the two-pronged objectives of eradicating poverty irrespective of race, and restructuring society to eliminate the identification of race with economic functions and geographical location.

The first prong of the NEP aims at progressively improving the economic condition and quality of life of the poor of all races by directly increasing their access to land, physical capital, training and other public facilities, thus permitting them to share more equitably in the benefit of economic growth.

The second prong seeks a fairer distribution among the various races of the opportunity to participate in the widening range of economic activity that is already underway. At present the Malays and other indigenous people are concentrated in the traditional sectors of the economy.

The accelerated development of agriculture, the dominant sector of the economy, is essential for the attainment of the objectives of the New Economic Policy. In the Third Malaysia Plan (1976-1980), the thrust of policies, programmes and projects within the agricultural sector will be to contribute to the eradication of poverty. This will be accomplished by raising income levels and increasing employment opportunities in the sector through programmes aimed at productivity increases in existing holdings, new land development; and the provision of a wide range of social services to raise the living standards of low income groups.

These statements of current policy objectives do not differ much in content from those of the Second Malaysia Plan Period (1970-1975) viz :

- (i) to increase employment opportunities through the sound exploitation of Malaysia's land, water and timber resources;
- (ii) to raise worker incomes by increasing productivity and the scale of operation particularly among the more traditional activities where incomes are lower than in other sectors;
- (iii) to expand the range and quantity and improve the quality of agricultural products, particularly food stuffs

(including fruits and vegetables), commercial crops and livestock products; and

- (iv) to strengthen institutions such as Farmers' Associations and agro-based cooperative societies which promote fuller participation of rural residents in the economic and social life of the nation.

Current policies are thus a continuation of the earlier tasks.

The main thrust of the agricultural development programme of the country under the Third Malaysia Plan (1976-1980), consists of five-dimensional-approach, namely :

- (a) the opening of a further 1.7million acres of jungle lands by the government's major development agencies for the landless farmers;
- (b) the improvement to existing and drainage and irrigation facilities in order to bring about to maximum productive capacity about 240,000 acres of paddy lands for the benefit of the paddy planters, as well as to enhance the productivity of 994,700 acres of lands for coconuts, oil palm, and other crops for the benefit of the mixed agriculturists;
- (c) the replanting and new planting of 597,700 acres of rubber, 26,000 acres of pineapple smallholdings, and 105,000 acres of coconut smallholdings, of which 22,800 acres will be intercropped with cocoa and 19,000 acres with coffee, for the benefit of the majority of rubber small holders, coconut, coffee and pineapple growers;
- (d) increasing livestock production at the rate of 5.6 percent per annum with an emphasis on the beef and dairy industry for the benefit of the small livestock operators; and
- (e) the promotion of a strong and viable rural institutional structure, comprising farmers' and fishermen's co-operatives.

The agricultural economy of Malaysia is different from that of its neighbouring countries, in that, in the past little attention was given to food production and greater emphasis was placed on the production of export crops, particularly rubber and oil palm. Such a practice resulted in a small but highly development modern sector of plantations well served with roads, research and credit through agency houses and technical expertise

from abroad. However, this policy also gave rise to a large subsistence sector growing food mainly for meeting the needs of the family and selling the small surplus through middlemen. The food-producing subsistence sector could not provide all the requirements of the country and much food had to be imported.

However, in more recent years there has been a change in policy and greater attention is now being paid to food production, with the aim for self-sufficiency in all those food crops that can be economically grown in the country. The rationale behind the policy is to reduce and eventually dominate the present high level of dependence on imported food; furthermore, substituting imports with locally grown food will provide greater employment and income to farmers.

Current agricultural programmes are thus designed to give emphasis to the small holding sector through improvements to existing agricultural areas; the transfer of farmers in traditional agriculture to modern agriculture in public and private land development schemes; and the enforcement and improvement of tenancy relations.

An integrated approach to accelerating agricultural development will be important strategy. This means a continuing reliance on farmers' cooperatives as the grass root machinery to channel the services provided by the government agencies. Productivity improvements will also be facilitated with the implementation of irrigation, drainage and other infrastructive schemes including rural roads, bridges and flood control. Crop diversification and local processing programmes, will be intensified.

High priority is accorded to increasing rice production to achieve self-sufficiency.

Complementing the *in situ* development programmes will be land development. More new land schemes will be established. To reach a greater number of the agricultural poor, concerted efforts will be made to introduce new types of land development schemes which will involve relatively lower costs and provide for a greater measure of settler participation.

On the international front vigorous efforts are being pursued to promote greater price stability through the International

Rubber Price stabilisation scheme. This will be done in view of the importance of rubber to the rural economy.

Agricultural Diversification

It is a national policy objective to diversify the agricultural sector and to reduce the predominant position of rubber as an export earner to that of a major one. The diversification programme envisages an expansion in the number of alternative crops to which land can be utilised in growing. In this, Malaysia has been comparatively successful. In the past decade or so, several crops have proven viable for incorporation in the programme. Oil Palm has become a major competitor with rubber for land, cocoa is growing in importance as an export crop. Pepper has remained unchallengable as the premier export crop of Sarawak. Sugar cane is fast becoming important as an import substitution crop and so are maize and sorghum, tobacco, tapioca, groundnuts, vegetables and local fruit. Live-stock rearing has recently come to the fore in the agricultural diversification programme and emphasis now is being given to increasing local production of livestock products, especially beef and dairy products on the basis of import substitution. The successful implementation of the programme in the near future can be visualised with the full active support of the private sector.

Livestock Development

One of the aims of government policy is to expand animal production so as to make the country less dependent on imports of livestock products. Increased animal production will also help to diversify the economy, provide some employment opportunities for the rural population and improve the diet of the local people.

The Malaysian Government has placed a high priority on the establishment of a beef-dairy industry to meet the domestic needs of the country. The market prospects for locally produced beef and milk are favourable and it is expected that demand will increase sharply in the future. A serious obstacle at present on the development of the beef and dairy industries is the absence in the country of experienced cattle-keepers with a tradition of beef-dairy husbandry. In the absence of such a

nucleus, the Government itself is establishing a number of beef-dairy schemes which are run on commercial lines by the National Livestock Industries Authority, which was formed in 1972. The authority's immediate programme was to establish cattle multiplication farms on a commercial scale throughout Malaysia and to introduce a modern livestock slaughter system into the country. The authority is in the process of establishing eight-dairy farms and each farm is expected to produce 8,000 to 10,000 animals annually when it becomes fully stocked and operational. The establishment of this authority will not only increase the production of cattle from farms directly under the authority but would also give greater impetus to the private sector to invest in cattle production. To expedite the development of the beef-dairy sectors, large numbers of breeding cattle will be imported and it is hoped to step up imports per annum from 2,500 head of cattle in 1976 to 15,000 by 1980. There is a need to increase the existing cattle numbers and improve the breeds of the local cattle.

The development of the livestock industry will aim at providing Malaysia with all its requirements of eggs, poultry, pork and beef by 1980. However, for mutton and dairy products, the target is to achieve 25 per cent and 20 per cent self-sufficiency respectively by 1990 with the aim of laying the foundation for the full employment of these two sectors.

The national livestock development policy may be stated as:

"To attain self-sufficiency, or near self-sufficiency, in livestock products by 1990 so as to provide these products at reasonable prices to meet the nutritional needs of the population as well as maximise the income of the livestock farmers."

The broad strategies that are to be followed in order to reach the targets set out by the national policy are :

- (a) to adopt where necessary economic and administrative measure to support and encourage local livestock production and to offer stable prices for these products;
- (b) to stimulate public and private sector interest and participation in livestock production in accordance with the New Economic Policy;
- (c) to train farmers, veterinary personnel and others on various aspects of livestock production;
- (d) to expand the animal health service in order to provide

- improved and efficient veterinary coverage for small holders and large commercial farms; and
- (e) to expand and intensify research on various aspects of livestock production.

Fisheries Development

The development of the fishing industry in Malaysia is the responsibility of two agencies, namely, the Fisheries Division and the Malaysian Fisheries Development Authority (MAJUikan). The former is a service agency to the industry being responsible for the enforcement of the Fisheries Act: the training of fisherman; the conservation of fisheries resources; the construction of supporting infrastructures such as cold rooms, jetties, harbours, etc., and research in marine fisheries. MAJUikan is a statutory organisation, established in 1971, to spearhead the development efforts of the Government in all aspects of the fishing industry like production, marketing, processing, and supply of inputs.

The fishing industry is one of the more important activities in the agricultural sector in Malaysia. Its importance stems from its role as a major source of protein supply, as a significant foreign exchange earner, and as a source of employment to a large number of people either directly or indirectly.

The fisheries development policy is derived from the overall national economic development policy, in particular that of the New Economic Policy. The Policy objectives of the fisheries sector are as follows :

1. to develop and exploit to the maximum the fisheries resources of the country in accordance with sound fisheries management practices and in line with the national demand for food;
2. to generate employment opportunities in the fishing sector with the establishment of a modern industry based on off-shore fishing and the development of secondary and tertiary industries related to fishing;
3. to raise the economic and social conditions of fishermen by increasing their productivity.
4. to restructure and consolidate the fishing community through community development scheme; and

5. to increase the ownership of the productive assets by the fishermen in the fishing industry.

Because of the relatively under-developed nature of the fishing industry on the east coast of Peninsular Malaysia the development efforts of the policy is being directed there so as to further exploit the fisheries resources of the waters of the South China Sea. Attention would also be given to the development of the fisheries sector in Sabah and Sarawak. The west coast fishing industry in Peninsular Malaysia would continue to be assisted in maintaining its productivity. Agriculture would be encouraged so as to increase the availability of fish to meet the rising demand in the future.

The present credit needs of Malaysia farmers are met by both non-institutional and institutional sources. The provision shops are the most important in giving loans to farmers, accounting for nearly 65 per cent of the average amount of borrowing per farm. Among the major institutions extending credit to agriculture are Bank Pertanian Malaysia (Agricultural Bank of Malaysia), Bank Rakyat (Cooperative Bank), Co-operative Societies, Farmers' Organisations, Commercial Banks, the Paddy Planters' Boards and certain state and federal government corporations. Funds acquired by the agricultural credit institutions come mainly from the government. The government has also established the Credit Guarantee Corporation in 1973 in order to increase the role of commercial banks in financing the agricultural sector.

Agricultural Research

One of the objectives of agricultural development as stated in the First Malaysia Plan (1966-70) emphasises agricultural research :

- (i) to increase the quantity and enhance the quality of agricultural educationists, researchers and extension agents so as to expand the number of skilled farmers and improve the skills of all individual members of the agricultural community;
- (ii) to support an intensive and continuing basic research on agriculture, forestry, fisheries, livestock products so as to break presently known yield barriers and develop improved patterns of production, processing and market-

ing that will utilise most economically the human, land and water resources of the country.

Thus to meet the needs of a modern and dynamic agriculture, a new structure for agricultural research and extension in Malaysia was presented to Parliament in early 1969. This autonomous statutory organisation, the *Malaysia Agricultural Research and Development Institute (MARDI)* is now responsible for public sector research on all crops (except rubber) livestock and poultry production and fresh water fisheries. Social and economic research in such areas as extension methods, farm management and marketing will also be the responsibility of MARDI. The main emphasis in MARDI's research programme will be the improvement of production practices and marketing opportunities for oil palm and cocoa, soil and water management research and rice production research. Priority will also be accorded to diversification crops, including tapioca, maize, soybean, cashew nuts, vegetables, fruits and sugar cane. Research are also undertaken on livestock improvement, particularly beef cattle, and on production economics and marketing.

The Administrative control of MARDI is vested in a Governing Board, comprising representatives from both the public and private sector. Scientific and technical direction will be provided by a scientific council. This council, consisting of highly qualified scientists and professional agriculturists from Government, agricultural education and industry will establish research priorities and provide guidance on programme planning and execution.

The major factor limiting efforts to strengthen agricultural research in Malaysia is the shortage of qualified Malaysian research workers. Overall demand for agricultural scientists with post-graduate training will exceed supply in the foreseeable future. To meet its requirements for qualified scientists, MARDI is embarking on an ambitious and comprehensive training programme. It will provide scholarships to potential research workers for courses leading to B. Sc, M. Sc, and Ph. D degrees in Malaysian and foreign universities.

In rubber research RRI concentrates on the production aspect of research in natural rubber. Its efforts have enhanced the productivity and cost competitiveness of natural rubber

vis-a-vis synthetic rubber. The highly successful breeding programme will be continued and intensified. Proper adoption of the higher yielding clones has led to a new system of planting recommendations based on the principle of maximum yield potential of a particular locality subject to the inhibitory influence of the environmental factors being adopted. Improvements in agro-management techniques have been achieved, particularly in propagation and planting methods, manuring, interrow management, exploitation and intercropping. Continuous emphasis is also given to the study of economic factors affecting production, resource use, processing and marketing.

In recent year, the RRI has taken on three distinct new responsibilities. Firstly, its activities has been extended to Sabah and Sarawak and a unit was set up in Sarawak in January 1975. Secondly, the RRI is now undertaking consumer research. The third important responsibility is to develop selective research which will be fully utilised by small holders. This has prompted the establishment in 1973 of the small holders' Project Research Division. It must be pointed out that research undertaken by RRI must also meet the demands of the estate sector but these demands are too advanced for the small holders and therefore the new division in the RRI will assist in transmitting the new research innovations to small holders.

The field staff of the RRI will continue to receive in-service training in order to further enhance the effectiveness of its extension effort. The RRI will continue to implement projects such as intercropping young rubber with cash crops.

Agricultural Extension and Education

To strengthen the Division of Agriculture's extension programme, four additional Farm Mechanisation Training Centres and six more Rural Training Centres have been planned for West Malaysia, to provide training to farmers in machinery operation and maintenance, while the Rural Training Centres teach crop production and home economics.

In Sarawak, several more Farmers Training Centres and Farm Institutes have also been planned.

In Sabah, funds will be made available for additional vocational training facilities for students, in-service for junior staff and rural training for farmers.

Agricultural Marketing

In order to accelerate the Government's intervention into the marketing of rural produce, the Federal Agricultural Marketing Authority or FAMA was established in October 1965, with the responsibility for coordinating the marketing of agricultural produce, of improving existing markets and method of marketing, of seeking and promoting new markets and outlet for agricultural produce and of collaborating with persons or organisation public or private to promote efficient and effective agricultural marketing. However in 1973, FAMA was given wider powers and responsibilities so that its functions and activities had become more diversified and extensive. It has the powers to :

- (a) implement marketing schemes on its own rather than through separate agencies set up for this purpose;
- (b) participate directly in buying and selling of agricultural produce;
- (c) go into production of agricultural commodities provided it is on the basis of a joint venture with some other agency;
- (d) take up equity in any concern or establishment promoting the marketing or processing of agricultural produce; and
- (e) establish corporation to carry out any project scheme to enterprise planned or undertaken by the Authority.

During the period 1973-1975 which covers the second half of the Second Malaysia Plan Period (1971-1975), the Authority had initiated and implemented various programmes and activities falling within the following broad areas:

- (i) Licensing or regulatory schemes;
- (ii) Establishment of processing facilities;
- (iii) Trading of agricultural produce;
- (iv) Market and Marketing Research;
- (v) Market Promotion and intelligence; and
- (vi) Development programmes for marketing.

The problems encountered in marketing of agricultural produce in both the domestic and the foreign markets are the same : price fluctuation and low prices. The situation is made worse when the produce is also exported and large numbers of small holders are involved. In so far as paddy is

concerned, the Government has made an attempt to reduce the adverse effects of the two problems through the establishment of a guaranteed minimum price (GMP). This GMP acts as a floor price for paddy; the government has guaranteed to buy all good clean and dry paddy offered to it by farmers at the minimum price. However, farmers are free to sell their paddy to the highest bidder at any time. GMP has two objectives, namely, to encourage paddy production and to ensure a fair return to the paddy farmers. For the consumers, the government has imposed maximum prices at which rice is to be disposed of in the domestic market. The prices are fixed according to grade and both locally produced and imported rice are covered. These matters are handled by the National Paddy and Rice Authority (LPN).

Locally grown tobacco and pineapple for canning are the other two agricultural products which are subjected to pricing regulations. The prices for flue-cured tobacco are set by the National Tobacco Authority and those for canning pineapples by the Malaysia Pineapple Industry Board.

Other agricultural products are not subject to any price regulation. The prices of these commodities fluctuate according to market demand and supply. However, the Government will assist small holders in finding market outlets for their produce in the domestic market through FAMA whenever requested to do so. The price FAMA pays for the produce ensures a fair return to the farmers, and it can be regarded as a floor price.

Fertiliser Usage

In order to achieve desired increases in food production, it is a general policy to encourage greater fertiliser application. Governments sometimes intervene in the fertiliser market when there is a world shortage of urea, which is an essential fertilizer in paddy cultivation. In 1974, local prices of urea rose from about M\$6 per 44 pound bag to M\$16 per bag. This steep increase in fertiliser prices means an increase in paddy production costs to farmers and results in a reduction of their incomes. To counter this, the government has intervened in the urea market, and paddy farmers can purchase

urea at a subsidised price. The cost of this price support to the nation is around M\$60 million a year.

Land Reform

Its land reform is pregnant with social consequences, no attempt has been made to carry out land reform, except for the promulgation of the Paddy Cultivators (Control of Rent and Security of Tenure) Acts 1967. However, the Act has not been completely implemented.

Green Book Programme

To instil into the general public consciousness the importance of food production, Malaysia launched the *Green Book* in December 1974 with the following objectives :

- (a) to increase food production to the level to self sufficiency.
- (b) to increase the incomes of the rural people so that the effects of inflation are reduced.
- (c) to motivate the people including government officials to be more involved in development efforts.

The main emphasis of the *Green Book* is on the full utilisation of the efforts and potential of the rural sector in order to bring about maximum benefits to the people and the nation. As a short-term plan, all available land that can be cultivated (but not at present cultivated for various reasons) will be planted with food crops. District level committees have been set up in all the districts in Malaysia with the responsibility of ensuring that all available land within the district is fully utilised for the growing of crops which will provide more food and greater income to the rural people.

Since its launching and up to the end of June 1975, the estimated area planted under the *Green Book* Plan is more than 19,000 hectares in Malaysia. Most of the area has been devoted to growing short-term crops such as bananas, maize and vegetables. Interest has been generated among the rural population in the raising of livestock and the rearing of poultry and fresh-water fish. These additional activities would produce extra income for rural households. The second phase of the *Green Book* programme with greater emphasis on commercialised farming, has just been launched by the Prime Minister.

C. AGRICULTURAL ADMINISTRATIVE SYSTEM

Principal Agencies and Administrative Organisations

In Malaysia, the Ministry of Agriculture is the main, though not the sole agency involved in administering agricultural matters. The others are the Ministry of Primary Industries which handles agricultural commodities such as rubber, palm oil, timber, tobacco, pepper and pineapple; and the Ministry of Lands and Regional Development. The state governments of Sabah and Sarawak have their own Ministries of Agriculture and Fisheries.

Agencies under the Ministry of Agriculture (MOA) are the Department of Agriculture (DOA), Department of Veterinary Services, Department of Fisheries, Department of Cooperative Development, Drainage and Irrigation Department, Muda Agricultural Development Authority (MADA), Kemubu Agricultural Development Authority (KADA), Besut Agriculture Development Project, West Johore Agriculture Development Project, the Farmers' Organisation Authority, Malaysian Agricultural Research and Development Institute, Federal Agricultural Marketing Authority (FAMA), the Pepper Marketing Board, National Livestock Development Authority (MAJUTERNAK), Fisheries Development Authority (MAJUIKAN), and Agricultural Bank of Malaysia (BPM).

Agencies under the Ministry of Primary Industries are the Rubber Research Institute (PRI), Rubber Industry Smallholders Development Authority (RISDA), Malaysian Rubber Exchange and Licensing Board (MRELB), Malaysian Rubber Research and Development Board, Malaysian Rubber Development Corporation (MARDEC), National Tobacco Authority and the Malayan Pineapple Industry Board.

Agencies under the Ministry of Land and Regional Development include the Federal Land Development Authority (FELDA), and the Federal Land Consolidation and Rehabilitation Authority (FELCRA).

Other agencies which are involved in agriculture but not directly under the above Ministries are the National Paddy and Rice Authority (LPN); and public corporations such as the Food Industries of Malaysia (FIMA) under the Ministry of Public Enterprises. A few state governments have also estab-

lished state agricultural development corporations. These corporations are mainly involved in agro-based industries or land development. A number of regional development authorities such as the Pahang Tenggara Development Authority, Central Trengganu Development Authority, etc., have also been established. However, these authorities play a coordinating role for other agencies which then locate projects in the region.

This multiplicity of agencies involved in agriculture perhaps reflects the complexities and multifacets of agricultural development and the consequence that no one agency or ministry can effectively and efficiently undertake all the numerous programmes necessary to administer and develop the sector.

Administration of the Plantation Sector

As had been stated earlier, the private plantations and estates (mostly rubber and oil palm) is an important component of the agricultural sector both in terms of physical acreage, production and contribution to the economy. The government apparatus is, however, organised mainly to look after the small-holding sector. This is true of both the Ministry of Agriculture, the Ministry of Lands and Regional Development and most of the other government agencies.

Private estates or plantations are left to be run as in any free-enterprise system. However, there is some control through the land leasing contract which stipulates the type of crop that could be cultivated. Private plantation are also subjected to taxation on land as well as on commodities, and they have to conform to government policies.

The activities of the Ministry of Primary Industries have relation with the plantation sector through price stabilisation schemes and overseas promotion. Agencies such as the Rubber Research Institute and RISDA of course contribute to the continuing success of the plantation sector in terms of research and replanting.

The private plantations organise themselves through the Oil Palm Growers' Council, the Malaysian Palm Oil Producers Association (marketing), the Rubber Producers' Council, and the Malaysian Agricultural Producers' Association.

Organisational Set-up of the Ministries

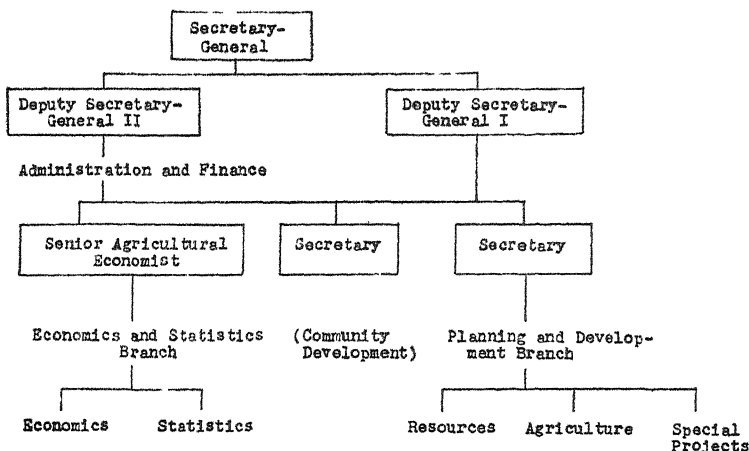
The senior civil servant in charge of the Ministry of Agri-

culture is the Secretary-General. He is assisted by two deputy secretary-generals, one in charge of administration and finance and other in charge of planning and development. There are three main branches, viz, Planning Development Branch headed by a Secretary, Economics and Statistics Branch headed by the Senior Agricultural Economist, and the Community Development Branch, headed by a Secretary.

In the Ministry of Agriculture, the principal assistant secretaries are divided into three functions of resources, agriculture and special projects. And in practice, the assistant secretaries are divided on the basis of agencies, each assistant secretary handles matters related to a few agencies under the Ministry of Agriculture. No doubt, these assistant secretaries also handle an assortment of other agricultural matters. But there may be some justification in considering whether assistant secretaries should be made more specialised; in the Ministry of Agriculture, functional specialisation could be along the basis of marketing and prices (all policies and matters), seeds, chemical inputs and mechanisation, credit, etc. Posts could also be created specially for important small holder crops such as paddy, coconut, etc.

Chart 1

**SIMPLIFIED ORGANISATIONAL SET-UP OF THE
MINISTRY OF AGRICULTURE**

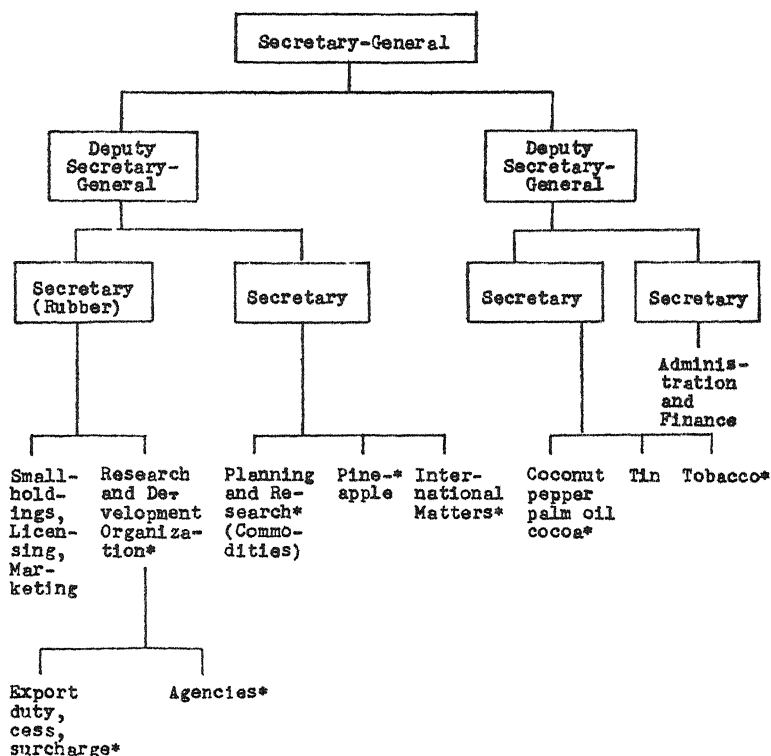


The Planning and Development Branch (PD) and the Economic and Statistics (ES) Branch are the arms of the

Ministry in administering agricultural development. While the PD Branch is staffed by civil servants, the ES Branch is supposed to be technical branch and is staffed by agricultural economists and statisticians.

The Ministry of Primary Industries is also headed by a Secretary-General, who is assisted by two deputy secretary-generals. The division of functions between these two appears to be on the basis of work load. One deputy is in charge of primary commodities such as rubber, pineapple and matters relating to the rubber agencies under the Ministry. The other is in charge of administration, finance and other commodities not covered by the first deputy. Functions of the principal

Chart 2
ORGANISATIONAL SET-UP OF THE MINISTRY OF
PRIMARY INDUSTRIES



*Principal Assistant Secretary or Assistant Secretary level

assistant secretaries and assistant secretaries are delineated along commodities basis.

Ministry of Lands and Regional Development

The Ministry of Lands and Regional Development has two big agricultural agencies under its wings, namely, the Federal Land Development Authority (FELDA) and the Federal Land Consolidation and Rehabilitation Authority (FELCRA). The Ministry itself has the following divisions—land administration, development, planning and research, and administration and finance.

Land is a state matter and is thus administered by the states. Consequently all usage of land, even by Federal Government departments will have to be approved by the state governments. Thus federal plans such as the Paddy Cultivators Act (Control of Rent and Security of Tenure) cannot be implemented without the consent of the states. There is a sub-cabinet level policy making and coordinating body called the National Land Council, which aims to formulate and harmonise inter-governmental relations regarding all land matters. The NIC is serviced by the Ministry of Land and Regional Development.

Personnel

Senior officers of the Ministries and departments are recruited by the Public Service Department. Statutory bodies, on the other hand, have a free hand in that, officers can be directly recruited by the organisations themselves. Most director-generals in statutory bodies are seconded from the Administrative and Diplomatic Service (or civil service) to head these organisations.

The number of personnel involved in administering agricultural development in Peninsular Malaysia is shown by the Ministry of Agriculture's figures for 1975 which reveals that there were 347 officers in the Managerial and Professional Group, 1003 in the Executive and sub-Professional Group, 1227 in the Clerical and Technical Group and 1695 in the Industrial and Manual Group.

Personnel development is handled by the Public Service Department which provides sponsorship for in-service studies or seminars, as well as by the National Institute of Public Administration (INTAN).

Policy Making¹⁹

Even though the Cabinet is the highest policy-making body, initiation for policy framing can come from EPU or the agencies or ministries. Irrespective of the source, the policy proposal will have to go through the surveillance of EPU which will then bring it up to the National Development Planning Committee (NDPC) and then the National Economic Council (NEC). The NDPC is chaired by the Chief Secretary to the Government and consists of top civil servants (including State Secretaries who are the administrative heads of State governments). The NEC comprises some key members of the cabinet. Upon clearance by NDPC or NEC, the policy proposal is then brought up for the Cabinet's decision. In the case of Malaysia, the actual policy making process constitutes a symbiotic relationship policies are decided on the Ministers after taking into consideration a host of alternatives or options as forwarded by the technocrats.

Machinery For Planning

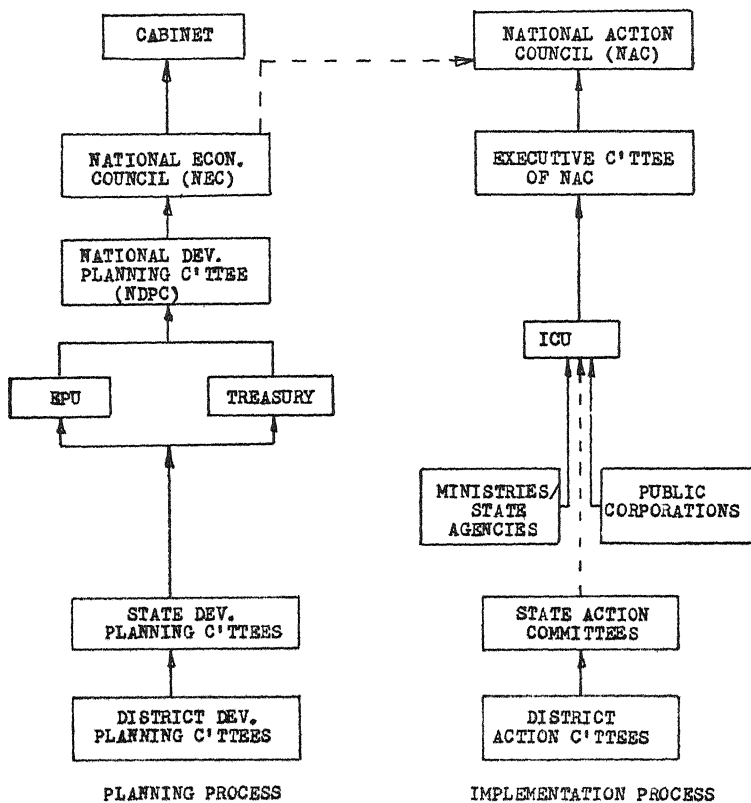
The EPU is responsible for long-term macro-planning for the nation. The agencies, however, are given much room to do their own planning; the coordinating and controlling device being the standards of the New Economic Policy, the Ministries concerned, and the EPU. Other institutions that play an important role in planning are the Treasury and the Inter-Agency Planning Groups (IAPG). The IAPG's are active prior to the formulation of the nation's five-year plans or the mid-term review of these plans. There is one IAPG for Agriculture and it consists of heads of departments. Its role is to coordinate the overall plans of all agencies.

The agricultural division of the EPU performs the functions of reviewing, coordinating and recommending for approval and assisting in the preparation of all policies, plans projects and budgets relating to overall agricultural development (forestry, fisheries, institution, agricultural and lands).

Generally, the responsibilities of this division are as follows:

¹⁹For an overall picture of the policy making process in Malaysia, see Elyas Omar, "Policy Analysis and Development in Malaysia", paper presented at the Colloquium on Policy Analysis and Development, Kuala Lumpur, 25-28 November, 1974.

Chart 3
AGRICULTURAL PLANNING AND IMPLEMENTATION PROCESS



SOURCE : Elyas Omar, *Policy Analysis and Development in Malaysia*, November, 1974, p. 23.

1. Assists in the formulation of basic government policies as they relate to agriculture in such areas as land alienation and development, cropping patterns, institutional development, modernisation programmes, research, forestry, fishing, etc., through the preparation of written recommendations or position papers for submission to the NDPC and NEC.
2. Undertakes, coordinates and provides guidance and assistance to the various ministries and departments in the identification, preparation and submission of

policies, programmes and projects relating to agricultural development on an annual, five year and longer term basis.

3. Supervises the review of the annual and supplementary development budget estimates and requirements relating to agricultural development and evaluates associated projects in accordance with approved policies and procedures. Prepares or reviews position papers thereon and may attend the Estimates Sub-committee hearings; takes appropriate follow-up action to implement the decisions of the NDPC and Estimates Sub-committee.
4. Monitors and supervises the preparation of brief monthly reports on the status and progress of projects in the agriculture sector and provides guidance and assistance to the implementation agencies as required.
5. Reviews and approves terms of reference for feasibility studies, assists in the selection of consultants, sits as a member of steering committees responsible for the studies and reviews study results along with department officials.
6. Supervises the collection of statistics and other information on a regular basis on all agricultural products presently produced for domestic consumption only and on agricultural products which could be grown in Malaysia for domestic consumption at some future time.
7. Assists in the drafting of legislation as it relates to the establishment and operation of various agricultural boards, agencies or corporations.
8. Attends meetings of a number of committees as the EPU representative such as; Coordinating Committee on Land Development; Central Agencies on Budget Examination; and Committee on the Exploitation of Natural Resources.²⁰

Planning Process

All ministries are responsible to correlate and scrutinise the plans, projects proposals and budgets submitted by the various departments and statutory bodies before they are sent

²⁰Organizational Manual, EPU, Prime Minister's Departments, Kuala Lumpur, Undated, Position Guide 11-3,

to EPU which is responsible for final review and coordination and to indicate the source of fund before forwarding them to the Treasury for approval and funds. The Ministry normally makes little changes to these proposals but transmits them to the EPU which then thoroughly studies the proposals. Whilst programmes or projects are identified by the agencies, EPU has the final say in the selection of projects. In this respect, EPU uses a point-system on the basis of the location of the programmes or projects, its income and employment effect, and other criteria conforming to the government's New Economic Policy.

Data for Planning

In this planning process for agricultural matters, the EPU makes wide use of data collected by the Ministry of Agriculture which has a statistics section, and the Department of Statistics. Planners have often complained about the paucity of data for Planning, hence an agricultural census is scheduled to be held in 1977 to correct this deficiency.

System of Budgeting

The Programme and Performance Budgeting System is followed by the government agencies in their bids for funds from the Central Government. The five-year plans only make provisional allocations and agencies still have to justify their spending through a system of annual development and operating budgets.

Planning and bidding for the annual development expenditures are made by the agencies in conformity with what has already been approved in the 5-year Plan. EPU again plays the central role in reviewing and approving the annual budgets.

The annual operating budget which covers the expenditure on wages, travelling, office maintenance, stationary, etc., is handled by the Budget Division of the Treasury. In this process, budget meetings are held between officers of each agency and officials of the Treasury where much persuasion and bidding is done to get posts and funds.

Financing the Development of the Rubber Industry

In Malaysia, the rubber industry directly finances its own development. A cess of 5.5 cents per pound is imposed on all

exported rubber. Four cents to replanting fund and 1.5 cents go to the research fund. These monies are invested in government securities and is used to finance the research and development activities of the rubber industry. For example RISDA handles the replanting programme of both estates and smallholders. An outright grant of \$900 is given for every acre of rubber replanted (with rubber, palm oil, fruits and short-term intercrops). \$600 actually comes from the cess and \$300 from the government's development funds.

Coordinating and Control

While EPU plays the central role in planning, on the same level and also in the Prime Minister's Department as well, is the Implementation Coordinating Unit (ICU). The ICU works directly under the National Action Council (or Executive Committee of the NAC). The NAC is, next to the cabinet, the second supreme policy making body. It is chaired by the Prime Minister and includes Cabinet Ministers, the Chief Secretary, the Chief of the Armed Forces Staff and the Inspector-General of Police. The ICU is set up to perform the functions of monitoring, evaluating and coordinating plans, programmes and projects. It serves as a secretariat for NAC which meets fortnightly. It is also responsible for the follow-up of decisions made by NAC. The role of the ICU is to keep track of the implementation of the development plans, and the workings of the government agencies. It is thus the watch dog of government agencies as well as public enterprises. Every agency has to brief the NAC at least once a year, and in this briefing, important decisions and directives are often made.

There is in existence a committee for the Modernisation of the Agricultural Sector which is chaired by the special economic adviser to the Prime Minister. Members of the committee are the heads of departments responsible for agriculture. The committee was set up to study ways to hasten the development of the agricultural sector, but has mainly been concerned with solving specific problems and in coordinating the different agencies in handling the problems.

On a lower level of coordination and control is the Ministries. For example in the Ministry of Agriculture, there is the Agricultural Planning and Development Committee chaired by

the Minister of Agriculture. Its members comprise all heads of departments and statutory bodies in the Ministry. Heads of departments are off and on called upon to brief the committee on the progress of implementation.

Another way of coordinating and avoiding duplication among department is through the placement of heads of departments in the board of management of statutory bodies. For example, the secretary-general of the Ministry of Agriculture is the deputy chairman of the Farmers' Organisation Authority. The Director-General of Agriculture, together with representatives from the EPU, Treasury and the Agricultural Bank are members of FOA's board. The Director-General of the Farmers' Organisation Authority is a member of the Boards of Management of MARDI and the National Tobacco Board.

Financial Control

The spending of funds of government departments come under the supervision of the Ministries in the sense that final payment is made by the Ministry, not the department. Statutory bodies are however 'self-accounting departments' and are given the prerogative in spending so long it is according to the allocation. Allocation is issued by the Ministry on quarterly basis. Control is through the annual check by the Federal Audit, as well as through the annual budgeting system. All agencies (including statutory bodies) have to submit monthly reports on expenditure to the Ministry.

Monitoring System

The monitoring system is sufficiently well developed. The ICU is currently studying suitable indicators to monitor change in the agricultural sector. As such, at the present time, progress is monitored through briefings to the NAC as well as through the system of annual budgeting where the agencies have to review and quantify their progress in terms of percentage achievement of planned targets. There is also the annual Economic Report of the Treasury and the mid-term reviews of 5-year plans.

Evaluation System

Evaluation is done mainly at agency level. Most agencies have

an evaluation division or section though it is doubtful whether much evaluation is done. It is unfortunate that an evaluative machinery has yet to be institutionalised at levels higher than agencies or ministries. There is thus a great gap to be filled in reviewing or evaluating strategies adopted in agricultural development, in order to see whether they have been effective or not.

The General Planning Unit in the Prime Minister's Department conducts socio-economic research. Its most important contribution is perhaps its check to see whether developmental programmes benefit the people.

National Council on Science, Research and Development

This is an advisory council which has only been formed in 1974. It has a committee on agricultural science which comprises prominent agriculturists among its members. Its effectiveness is yet to be seen, though its stated functions are impressive, namely, to advise on all research and development efforts relating to agriculture, to monitor research and development activities, to formulate and establish priorities in agricultural research, to advise on legislation, etc.

INSTITUTIONAL INFRASTRUCTURE

The implementation process, via the National Action Council (NAC) and the Implementation Coordination Unit (ICU), goes down to the state level in the form of the State Action Committee, to the district level in the form of the District Action Committee, and finally down to the grassroot Village Development and Security Committee.

District Office

Each State in Malaysia is divided into administrative districts under a District Officer drawn from the Administration and Diplomatic Service or the State Civil Service. Each District Office is divided into two divisions, namely, District Division and Land Division. The two divisions are further sub-divided into smaller sections, namely, Administrative Section, Rural Development Section and Town Board Section, all under District Division. Land Section, Registration and Tax Section, and Mines Section all under the Land Division. Each of the two

divisions is under a senior Assistant District Officer whilst each sub-sections is under an Assistant District Officer.

Village Development and Security Committee

Each Administrative District is further divided into *Mukims* which is sub-divided into *Kampungs* (village). Each Mukim is under a *Penghulu* and each *Kampung* or village is under a Kampung Headman. Both the Mukim and Kampung are under the Rural Development Section of District Office.

At the Kampung level, a Village Development and Security Committee is formed with the Kampung Chief as the chairman.

District Action Committee

The Rural Development division of the District Office plays the role of planning the development programmes and servicing the *Action Committee* which is set up at State and District levels to execute the programmes planned. These plans are implemented through the *village development committees* with the assistance of other government agencies like Drainage and Irrigation Department, RISDA and Farmers' Cooperative.

Other committees at district level are the District Security Committee, Green Book Committee, Land Rehabilitation Committee, Agricultural Produce Marketing Committee, District Land Committee, Squatters Committee. The members of committee are representatives of government agencies.

Farmers' Cooperatives

Agro based Cooperatives under the Jurisdiction of Cooperatives: There is in existence in Malaysia many rural cooperatives. In 1973, with establishment of Farmers' Organisation Authority, the following bodies came under the jurisdiction of F.O.A., that is a total of 109 Area Farmers' Association, 9 State Farmers' Association, national Farmers' Association and more than 1,533 agro-based cooperative societies comprising 821 rural credit cooperative societies, 437 multipurpose cooperatives, 205 rice milling cooperatives, 17 marketing cooperatives, 17 land development and livestock cooperatives, 6 cooperative banks, and 10 rice mill associations. Efforts are now directed to form about 210 Farmers' Cooperatives by amalgamating the above institutions.

Functions of Farmers' Cooperative

The functions of a Farmers' Cooperative can be categorised as follows:

1. processing,
2. marketing,
3. supply of farm inputs,
4. supply of consumer goods,
5. agricultural credit,
6. savings, and
7. transport and other functions.

Organisation and Staffing of Farmers' Cooperative

A Farmers' Cooperative consists of basically six staff paid by the Government.

The Farmers' Cooperative is managed by an Area Manager who is a college graduate. He is responsible to the Board of Directors for the operation and management of the agribusiness and service activities.

Assisting the Area Manager in running the activities are 5 Assistants heading each section, namely, Organisation and Production, Credit, Agribusiness, Extension and Account. The assistant is usually a graduate of an agriculture Institute.

Additional staff of Farmers' Cooperative are usually employed and paid by the Farmers' Cooperative itself.

Board of Directors of Farmers' Cooperative

Administrative affairs of Farmers' Cooperative are under the Board of Directors consisting of 11 persons:

- (a) 7 persons elected by the Annual General Meeting.
- (b) 4 persons appointed by the Minister.

Members Representation in Farmers' Cooperative

Each member unit is eligible to send 2 representatives for its first 50 members and an additional 1 representative for every 50 members that follow.

Grassroot Units

Farmer Cooperatives may establish a small agricultural unit for one or more Kampung within its area. Under the SAU, small working groups may be established on project basis

upon the resolution of the board of directors' meeting. For each SAU, a chief and a deputy chief shall be elected from among its members in the unit to assist the Cooperative in carrying out its programmes. For each working group a chief shall be elected by and from among its members. The working groups shall be under the guidance of the chief of the SAU. Both the chief and deputy chief do not draw any salary, but with the approval of the supervising officer, may be provided with facilities for the execution of their duties.

Farmers' Cooperatives as Local Credit Centres (LCC)

In the major paddy production areas (double-cropping areas) in Malaysia, Farmers' Cooperatives function as Local Credit Centres of the Agricultural Bank of Malaysia. As Local Credit Centres, they perform the vital function of channelling the short-term paddy production credit of the Agricultural Bank to the farmers. For performing the role of LCC, the farmers' Cooperatives receive a small commission from the Agricultural Bank.

Farmers' Cooperatives as Stockist and Sub-stockist of Urea Fertiliser Subsidy Scheme

This scheme was started in August 1974 and the Government allocated a total of \$60,000,000 specially for this scheme.

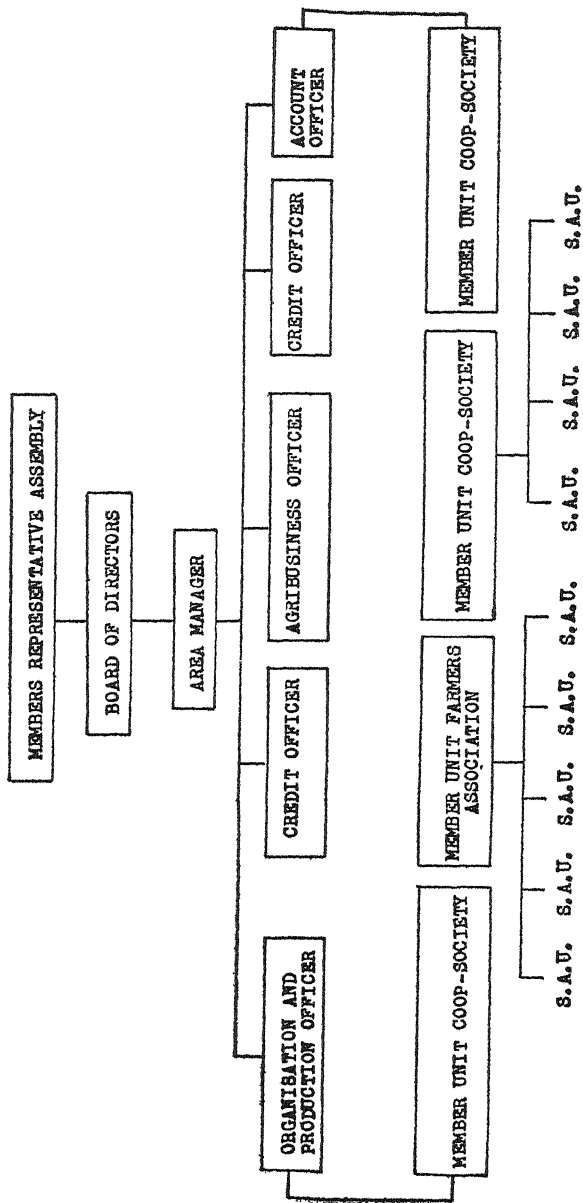
The National Farmers' Association (NAFAS) plays the main role of distribution of urea fertiliser and is responsible for the collecting of payment and settling it with the Ministry of Agriculture. Farmers' Cooperatives are chosen as stockists and sub-stockists, for area distribution a total of 148 stockists and 281 sub-stockists have been chosen.

Group Processing Centres (GPC)

One of the projects undertaken by RISDA is Group Processing Centre (now known as Small holders' Development Centres). It is aimed at providing facilities to small holders to process and sell their rubber as a group and also to promote the cooperative concept.

GPC project was started under the Rubber Research Institute of Malaysia in the early sixties. Initially the small

Chart 4
ORGANISATIONAL STRUCTURE OF FARMERS' COOPERATIVE



holders have to pay for building expenses in instalments.

On 1st January, 1974 all GPC's that were established came under the jurisdiction of RISDA.

In the Third Malaysia Plan it is proposed that 1200 GPC to be set up, *i.e.*, 240 GPC a year and it is expected that 2000 GPC will be established by the end of Third Malaysia Plan.

Trade Unions

The National Union of Plantation Workers is the largest and strongest trade union in Malaysia, embracing about 250,000 plantation workers.

The membership of the NUPW is 165,000 which is made up of workers in the rubber estates as well as the oil palm, coconut, cocoa, pineapple and tea estates.

Prior to the formation of the NUPW on 2nd November 1954, there were five separate unions serving the plantation workers, the first being organised in Seremban on 27th January 1946. These five unions merged to form a single union, *i.e.*, the National Union of Plantation Workers.

Apart from the traditional trade union functions such as securing better wages and conditions of employment and attending to trade disputes and welfare needs, the NUPW as a service organisation provides the following direct services to its members and their children:

Assist the members:

- to obtain citizenship
- to secure employment permit
- to withdraw employees provident fund

Provides the members:

- Free legal assistance whenever needed
- Trade Union education
- Education of family planning
- Education of cooperational thrift

Provides the members' children:

- Scholarship and study loans to higher education
- Financial assistance to buy books
- Technical training
- Hostel facilities

Licensed Rural Traders

In Malaysia, the Government has attempted to regulate the activities of the rural entrepreneurs. For example, all traders who participate in activities such as paddy purchasing and rice marketing have to process a license issued by the National Paddy and Rice Authority (LPN). Rubber dealers need to have licenses from the Malaysian Rubber Exchange and Licensing Board (MRELB).

BIBLIOGRAPHY

1. Chee, Stephen, *Government Policy and Rural Development in Malaysia*. Paper presented at the Seminar on "Approaches to Rural Development in Asia" organised by the Asian Centre for Development Administration, Kuala Lumpur, Malaysia, 26 May-3 June, 1975.
2. Elyas Omar, "Policy Analysis and Development in Malaysia". Paper presented at the Colloquium on Policy Analysis and Development, Kuala Lumpur, Malaysia, 25-28 November, 1974.
3. Fisk E K, "Malaysia" in R.T. Shand (ed.), *Agricultural Development in Asia*, Canberra, Australian National University Press, 1969.
4. Food and Agriculture Organisation of the United Nations, *Malaysia: Country Development Brief*. Food and Agriculture Sector (including Fisheries and Forestry). Food and Agriculture Sector Country Brief series No 1, June 1973.
5. Ford Foundation, *Policies and Measures Leading Toward Greater Diversification of the Agricultural Economy of the Federation of Malaya*, Kuala Lumpur, 1963.
6. Helm, Anthony Richard, "Some Aspects of Post-war Agricultural Policy in West Malaysia." Unpublished M.Sc. thesis, University of Hull, 1969.
7. Kamaruddin bin Abdul Rani, "Land Administration in West Malaysia: A Structural Modification for Development Administration." Unpublished Master degree dissertation, University of Pittsburg, 1969.
8. Lim, David, *Economic Growth and Development in West Malaysia 1947-1970*, Kuala Lumpur, Oxford University Press, 1973.
9. Ministry of Agriculture and Rural Development, Report of the Government of Malaysia to the Food and Agriculture Organisation of the United Nations 1973-1975, Kuala Lumpur, Malaysia, 1975.
10. Mohamad bin Jamil, "Agricultural Development Process in Malaysia—Past and Present." Paper presented at "Management Skills Workshop for Middle Level Managers in Agriculture," sponsored by the East-West Food Institute and the Government of Malaysia, Kuala Lumpur, 24 April-15 May, 1974.

11. Mohd. Tamin bin Yeop, *et. al.*, "The Cornerstone of Agricultural Development: Conscious Planning and Systematic Implementation." Alor Star, Muda Agricultural Development Authority, 1972.

12. National Institute of Public Administration, Malaysia (INTAN). Sistem Perancangan dan Pelaksanaan Di Peringkat Kebangsaan. Biro Perundangan dan Penyelidikan INTAN, Kuala Lumpur, January 1975.

13. National Institute of Public Administration, Malaysia (INTAN). Sistem Perancangan dan Pelaksanaan Rancangan-rancangan Di Peringkat Negeri. Biro Perundangan dan Penyelidikan INTAN, Kuala Lumpur, January 1975.

14. Puthucheary, M.C., "The Operation Room in Malaysia as a Technique in Administrative Reform." Paper presented at the Seminar on "Administrative Reform and Innovations", organised by the Government of Malaysia and the Eastern Regional Organisation for Public Administration, Kuala Lumpur, June, 1968.

15. Robless, C L, "Public Sector Management and National Development". Paper presented at the Conference on "The Role of Management in National Development," Sept. 4, 1975. Kuala Lumpur, Published in *Malaysian Management Review*, Vol. 11 (1), April, 1976.

16. Thong Yaw Hong, "Planning: The Malaysian Experience." Paper presented at the First Seminar on Development held in Kuala Lumpur, Malaysia, 24 Oct — 3 Nov. 1966, organised by the Malaysian Centre for Development Studies.

17. Treasury, Malaysia, *The Expenditure Budget 1975*, Government Printers, Kuala Lumpur, 1974.

M. Lakshmiswaramma

Agricultural Administration in Malaysia*

Economic growth with social justice is one of the most important goals of the developing countries of the world. Attainment of the objective calls for the adoption of modern technology to the processes of production and management. It requires in turn a reorganisation of the traditional institutional structures and reorientation of the attitudes of the people towards modernisation. As these developments are not spontaneous, governments of many of the developing countries are consciously pursuing a planned approach to the problems of resource development and institution building. Malaysia is one of the developing countries of South-East Asia which has adopted a planned approach to economic and social development within a federal democratic framework.

The objective of the paper is to present a critical analysis of the policy and management aspects of agricultural administration in the country. The main focus is on the processes of planning, programming, coordination and control.

The paper is mainly based upon interviews and informal meetings with officials engaged in agricultural, land, rural development and financial administration at federal, state, regional and district levels. Other sources of information are

*The Paper is based upon a study tour report prepared by the team consisting of Smt. M. Lakshmiswaramma (the writer of the paper), Sarvashri N.C. Ganguli and M.K. Narain. I am thankful to both of them for their comments and suggestions.

published and unpublished literature on the subject. The scope of the paper is limited to peninsular or West Malaysia only.

SOCIO-ECONOMIC BACKGROUND

Malaysia has a federal form of government. The relations between the federation and the States are set out in parts V, VI and VII of the constitution. Each state has a separate constitution which is guaranteed by the federation, a ruler or governor and a Legislative Assembly. There are the schedules or categories of legislation-federal, state and concurrent. The Ninth Schedule lists the areas in which federal and State legislatures may operate. Agriculture, land, fisheries, mining and forests are, under the constitutional arrangement, state subjects. Any inconsistency between a federal law and state law is settled in favour of the former. Residuary powers rest with the states.

Malaysia has a system of federal services in functional areas of administration such as engineering, agriculture besides its Home and Foreign Service. The Public Service Commission is responsible for appointments to all posts, promotions, transfers and security relating to government servants.¹

The economy is serviced by a relatively well developed system of roads, railways, coastal transport, communication, and power facilities. Contribution of the manufacturing sector is only 16.6 per cent of the Gross National Product. Agriculture occupies a pivotal role in the national economy accounting for 32 per cent of the total national product, 48 per cent of the country's export earnings and 52.6 per cent of the total employment.² But its levels of production and income are low when compared to the manufacturing sector. There are two distinct sub-sectors within agriculture. One is the small tenant holding sector which utilises 63 per cent of nations seven million cultivated acres and accounts for the entire food production and 50

¹The Commission deals with inter-state transfers only. Before posting an officer to a State it consults the Chief Minister of the State. Intra-state transfers are within the authority of directors of functional services.

²*Economic Report, 1974-75, The Treasury, Malaysia.*

per cent of the rubber production in the country.³ Its techniques of production are mostly traditional and utilise very little purchased inputs. Consequently its income levels are low. On the other hand, there is the commercial crop estate agriculture which is export oriented, employs modern methods of production, processing, marketing and management and reaps higher levels of profits.

Another important factor in the Malaysian context is the plural nature of its society and the identification of races along occupational lines. Malays, Chinese and Indians are the main ethnic groups of the country. Malays constitute around 53 per cent, Chinese 35 per cent, Indian around 11 per cent and others about 1 per cent of its 10.4 million population.⁴

A majority of Malays are rural based depending upon small tenant holding agriculture. The Chinese are mostly urban based and are concentrated in the business, banking, mining, service and estate agricultural sectors of the economy. Indians are mostly found either as agricultural labourers in rural areas or in service and petty trade sectors in urban areas.

The concentration of races in different sectors with widely varying levels of production has resulted in the uneven distribution of income among the races. The mean monthly income of Malay households in 1970 was \$179⁵ while that of Chinese and Indian households was \$387 and \$310 respectively. In the low income range of below 100 dollars Malay households constitute eighty-five per cent whereas Chinese and Indian households constitute 9.6 per cent and 4.9 per cent respectively.⁶

AGRICULTURAL POLICY AND STRATEGY

The New Economic Policy outlined in the Second Malaysia Plan has, as its overriding objective the promotion of national unity through the two pronged strategy of eradicating poverty by raising income levels and providing employment to all

³Ahmad Sarji bin Abdul Hamid, *Farmers' Organisation Authority, Malaysia*, Kuala Lumpur, Asian Centre for Development Administration, June 1975 (mimeo).

⁴*Census Report*, Malaysia, 1970.

⁵Dollar referred to in the paper is the Malaysian dollar. Its exchange value to one U.S. dollar is approximately 2.5.

⁶*Mid-term Review of the Second Malaysia Plan, 1971-75*, Kuala Lumpur, 1973.

Malaysian and to eliminate the identification of race, with economic function. The first requires rapid expansion of the economy and the latter rapid change in its structure.⁷

As 72.1 per cent of Malaysians live in rural areas and more than half of them are dependent upon agriculture, the government's policy is to attain the objectives through the instrumentality of this sector. Agriculture and rural development were, accordingly, given top priority in all the four plans. In the first Malaya Plan (1956-60) 24 per cent of the total 964 million dollars was allocated to Agriculture alone. In the Second Malaya Plan, 1961-65, approximately 56 per cent of the estimated public development expenditure was allocated to agriculture and allied services. In the first and Second Malaysia plans (1966-70 and 71-75) there is an increase in the amount allocated to agriculture even though its share in the overall development expenditure has slightly declined.

Defective tenurial system, inadequate infrastructure facilities like irrigation, power, transport, lack of adequate and timely supply of production inputs and services and lack of knowledge on the part of farmers about methods of production are identified as some of the most important reasons for low productivity in agriculture. The laws of inheritance⁸ of Malay farmers which are based on Islamic law have also added to the problem of fragmentation of land holdings. As a simultaneous attack on all the problems is an enormous task it was approached in a phased manner.

Agricultural policy in the First Malaya Plan period was concerned with the provision of physical amenities like transport, irrigation, drainage, etc. It was soon recognised that the small holding tenant farmer was not properly motivated to take advantage of infrastructure facilities. In the second phase of planning, considerable amounts were, therefore, invested on community development and cooperative schemes. As the results were slow, it was decided in the third phase (First and

⁷ *Second Malaysia Plan, 1971-75*, p. 4-8.

⁸ The inheritance laws based upon the Islamic law follow the *fariat* system under which each piece of land owned by a deceased individual is divided equally among his heirs. An individual can make a will during his life time under the *wasiat* system but it will be superseded by the *fariat* law in the event of his death.

Second Malaysia Plans) to intervene more directly in agricultural development through supervised credit and input supply schemes.

The strategy of the government⁹ with regard to structural reform has been to allow the estate agricultural sector to contribute to its short-run goals of higher output and profit levels. It is considered essential as the economy is heavily dependent upon primary exports such as rubber, oil palm, etc. At the same time, the government's endeavour has been to create a large number of economically viable and commercially oriented small holding farming community. In the areas of credit and marketing the endeavour is to create a competitive force to the private money lending and marketing sector but not to eliminate it. These measures are expected to help in fulfilling its long-term objective of reducing intersectoral and inter-ethnic imbalances. The programmes of the Federal Land Development Authority, Federal Land Consolidation Authority, Muda Area Development Authority and Federal Agricultural Marketing Authority are to be viewed in this context.

In respect of cropping, the strategy is to consciously adopt diversification at national and farm levels. It is considered essential to reduce the dependence of the economy and the farmer on one or two crops. The introduction of new crops like oil palm, cocoa, sugarcane, tobacco etc., and the crop rotation programmes of the government are better understood in the light.

The government has been following an integrated area approach to augment levels of productivity in small holding agriculture. Production inputs such as good variety of seeds, seedlings, fertiliser and pesticide blends, etc., are supplied directly. This coupled with better marketing and processing facilities.

The pricing policy of the government assures a remunerative price for fertiliser based agriculture. This is especially true of paddy where the farmer is guaranteed of a minimum statutory price which compares well, and is sometimes higher than the open market price.¹⁰

⁹*Second Malaysia Plan, 1971-75, p. 43-48.*

¹⁰The statutory price of paddy was slightly higher than the ruling market price in 1975-76,

ORGANISATIONAL SET-UP

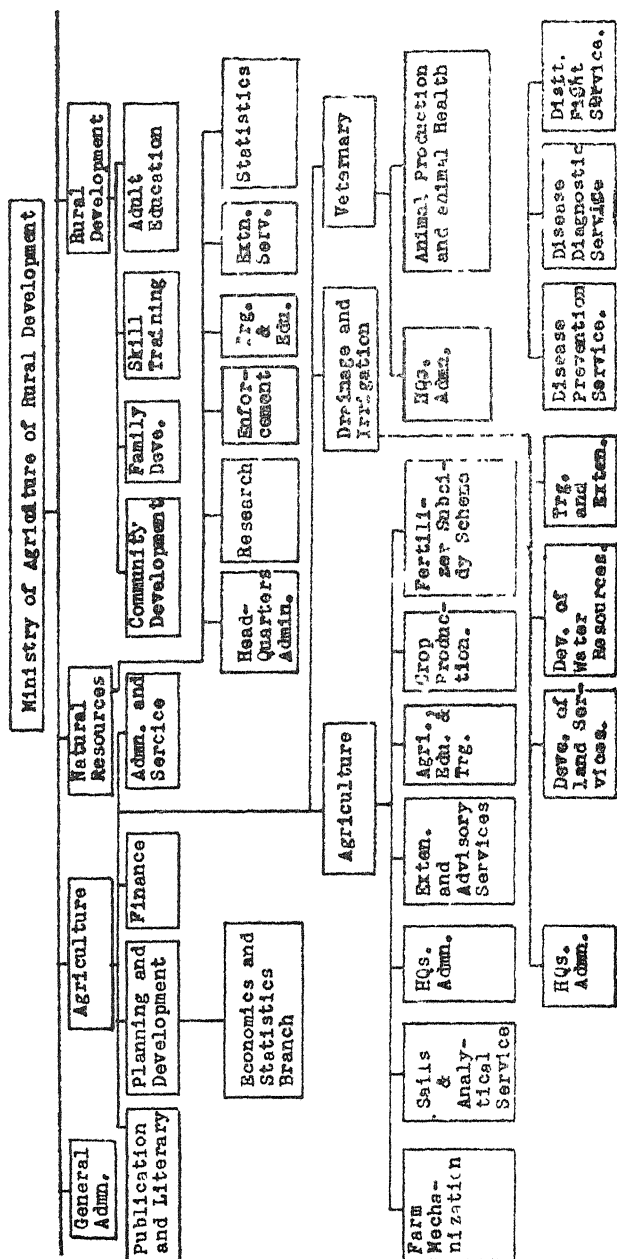
Several organisations are, at present, involved in the implementation of the strategy for agricultural development in Malaysia. The federal ministries of Land Agriculture and Rural Development, Power, Primary Industry Transport and Works, Education and also the State Department of land, agriculture are actively engaged in the development of agriculture, besides a host of Boards, Corporations and Regional Authorities. But the primary responsibility for formulation and implementation of agricultural and rural development policy lies with the Ministry of Agriculture which is headed by a Cabinet Minister. Chart 1 gives the organisational structure of the Ministry. The Planning and Development cell of the Ministry coordinates the programmes of the various departments and statutory bodies coming under the control of the Ministry. The placing of irrigation, drainage and animal husbandry units under the overall control of the department of agriculture facilitates better coordination of land and water management policies and programmes and farming and animal husbandry. The department of agriculture is headed by Director General, a technocrat. He is also head of the federal agricultural service. At the state level directors of agriculture and irrigation and drainage are responsible for the formulation and implementation of state programmes within the overall framework of the national plan.

At the district level, the most important functions are maintenance of records relating to land ownership, tenancy and land utilisation and enforcement of laws relating to them. Construction and maintenance of small bridges, minor irrigation and drainage, feeder roads are other important activities. District Officer belonging to the Malaysian Home Service is the administrative head of the district. The various officers in charge of irrigation and drainage, agriculture, community development and law and order belong to the federal services and work under the overall supervision of the District Officer. The lower levels of staff are employees of the State Government.

In addition to federal, state and district level authorities there are a number of public bodies dealing with the opening and development of new lands and supply of inputs and

Chart I

ORGANISATIONAL STRUCTURE OF THE MINISTRY OF AGRICULTURE, GOVERNMENT OF MALAYSIA



services to farmers. The latter are spread over the entire country. In case of all the authorities the practice so far has been to adopt the pattern of government organisation with strong central headquarters and field offices located at various places. One of the most important problem arising out of the multiplicity of organisations is that of coordinating the policies, plans and programmes of the various statutory bodies in a meaningful way so that duplication of effort and waste of financial and manpower resources is avoided. The recent setting up of a separate ministry for the purpose of coordinating the policies of the public corporations indicates that the government is alive to the intensity of the problem.

PROCESS OF AGRICULTURAL PLANNING

The process of plan preparation for agriculture starts at the village level. Each village has a Village Development Committee headed by Katua Kampong (Village Chief). He, along with other members of the Committee, is nominated by the District Officer from amongst the villagers for a period of three years. They, often, happen to be either economically, socially or politically influential people of village. One member is also nominated from youth of the village. The village committee considers the needs of the village and prepares the village plan for submission to the *mukim* chief. District, in Malaysia, is divided into a number of *mukims*, consisting of several villages. The administrative head of the *mukims* is known as *Penghulu*. His main function is to bring about, at the stage of preparation of village plan, some consensus among village chiefs regarding the priorities of the mukim and to consolidate all the village plans into a *mukim* plan for submission to the District Officer.

At the district level there are two important committees responsible for the formulation and implementation of programmes. They are the District Development Committee and the District Action Council. The District Officer is chairman of both the committees. The former consists of officers in charge of land administration, agriculture, law and order, community development, drainage and irrigation and representatives from statutory bodies dealing with agriculture and rural development and religious head of the district. The main

purpose of the committee is to scrutinise the *mukim* proposals in the light of the needs of the district and their technical feasibility and prepare a function-wise plan for the district for submission to the District Action Council. It, also, sorts out across the table, problems of programme coordination and implementation.

The District Action Council is the apex decision making body at the district level and is more comprehensive in its membership. It includes, besides civil bureaucracy, elected representatives to the local Assembly. At its monthly meetings in the District Operations Room, equipped with charts, etc., the committee discusses and decides about development policy, and programmes. The projects approved by the Council are consolidated into the district plan and sent to the state secretary for approval. The functional plans of the district are sent to the respective state directors of agriculture, irrigation and drainage. The committee technique is repeated at the state and federal levels also.

The state directors of technical services scrutinise the district plans from the point of view of national and state priorities and policies and the overall needs of the state and its own resources. The individual departmental plans are thereafter submitted to the State Executive Development Committee. It is an official level body chaired by the State Development Officer. State Planning Units are, recently, set up in several states to provide professional expertise to the State Development Committee and Action Councils. As the professional skill of these units is meagre, the Economic Planning Unit of the Prime Minister's departments is helping them. The consolidated plan of the state is submitted to the State Action Council. The plan gives, separately, the projects that are to be financed from its own funds and those from federal assistance. The State Action Council is chaired by the *Mentri Besar* (chief minister) and includes besides the civil bureaucracy, elected representatives of the State of Parliament.

The final plans in respect of each functional area, as approved by the State Action Council, are sent by the State directors to the Director General at the national level. The state plan as a whole is sent to the Economic Planning Unit with a copy to the Treasury.

The Director Generals' scrutiny of the state's plan is from the point of view of mutual consistency to the projects, their technical feasibility and their national importance. The planning and development cells undertake pre-investment appraisals of the projects. The Director Generals' Office prepares the departmental plan. The projects which the federal government undertakes on its own are shown separately from those it undertakes through the State Governments. Normally, bigger projects, pilot schemes and programmes involving more than one state or involving the cooperation of several organisations are undertaken by the federal department directly. The departmental plan is submitted to the EPU through the Secretary General of the Ministry. They are discussed in the sectoral Interagency Planning Groups. After being approved by the EPU, they are included in the plan for submission to the National Development and Planning Committee. The scrutiny of the plan in the committee pertains to the policy implications of a programme and not to the details of investment. After being approved by the NDPC the plan is sent to the National Economic Council for final approval.

It is evident from the process of plan formulation that neither the village nor the district level committees are given any prior indication of the quantum of resources that are likely to be made available for the plan period. The plans based upon village and district needs get pruned for a variety of reasons. As the resources at the state level are limited and since the federal government does not indicate in advance its resource commitment to State schemes planning at state level, often, tends to be an empty exercise. What is ultimately approved by the NEC turns out to be the plan of the federal government. Besides lack of financial resources the meagre professional skills at state and district levels act as another constraint in their planning. The result is that planning in actual practice, tends to be top down. But in the process of pruning and adding at the state and central level care is taken that local demands which are of a sensitive nature, are given due consideration. This is due to the fact that the United Malayan National Organisation, senior partner in the ruling National Front, has a nation-wide organisational structure with about 3000 local branches penetrating into the village

level. The National Economic Council, the State and District Action Councils comprising of the political element voice and safeguard the local needs and interests. In fact, the communication system established between the Ministers and the grass-root level politicians who often happen to be traditional local elites, keeps the top leadership informed about happenings at grassroot level. The nomination of local elites to the Village Development Committee serves the dual purpose of coopting a potentially disruptive element into the development administrative structure and ensuring that the bureaucracy is attentive to the needs of the rural electorate.

MACHINERY FOR PROGRAMME COORDINATION AND CONTROL

Another important innovative feature of the Malaysian system the setting up of the high level machinery for coordination and implementation of programmes. The machinery is the National Action Council consisting of select members of the Cabinet and representatives from statutory organisations and presided over by the Prime Minister. The Implementation, Coordination and Development Administration Unit of the Prime Minister's department provides secretarial and staff services to the Council. The Executive Committee of the Council meets once a week to hear briefings from various agencies of the government of their efforts and problems in implementing the policy, to identify bottlenecks and take action to resolve them. The ICDAU watches and reports to the Council on the follow-up measures taken by the departments on the suggestions and comments made by the NAC. The unit was earlier coordinating the policies and programmes of the public sector corporations. The newly set up Ministry of Coordination of Public Sector Agencies has taken over this task from ICDAU. The unit is further charged with the task of promoting innovative techniques and procedures in the government.

PROGRAMME REPORTING AND REVIEW

The briefing techniques used by the ICDAU and the departments at meetings of the NAC are based on the National Operations Room system developed in 1961-65 plan, Under

the system, Operations Control Rooms have been set up at each level of decision-making. The objective of the system coupled with that of NAC is to simplify and speed up the task of progress reporting, evaluation and reviewing. It helps the decision-maker to take corrective action in time. In a well organised Operations Room, progress reporting data are presented at three levels:

1. The status of the total programme under each ministry/sector. It is a summary of the detailed progress reports of all the departmental programmes;
2. A detailed presentation of the status of the departmental programmes; and
3. Presentation at the project level.

The form of reporting indicates, by the use of colours, whether the project/plan is implemented according to schedule or behind or ahead of schedule. The NAC's programme review is based upon the progress data presented in the Operations Room and briefings given by the respective officers on the problems facing the project/plan.

The surprise and routine visits made by Mentri-Besar, ministers and the Prime Minister himself and the system of individual briefings by the departmental officers serve as effective methods of programme review, evaluation and control at the field level. When a Minister visits a district, the district officer briefs him about the progress achieved in respect of each project and programme along with the reasons for shortfalls, if any. The Minister also meets the departmental officers individually. The meetings usually take place in the Operations Room. The bottlenecks are identified and action is immediately taken to resolve them. As the country is small, the system of supervision and control is effective.

SYSTEM OF FINANCIAL CONTROL

Another important factor in programme formulation and implementation is the financial control practices. The inherited system of budgeting and financial control provided for tight treasury control over trivial matters ignoring the larger issues of resource allocation, operational efficiency and programme effectiveness. There was no attempt to quantify output and relate it to programme costs. There are two budgets, one for

ordinary and another for developmental expenditure. In the case of ordinary budget, expenditure ceilings for individual departments were fixed by the Treasury on the basis of the previous year's expenditure levels. It largely ignored the maintenance costs on newly constructed capital works and expenditure on personnel such as extension workers.¹² On the other hand it was easier to get funds for development works of capital nature. As the professional expertise in the treasury was limited, project scrutiny was perfunctory. Transfer of funds between items of the budget, no matter how small, required the prior approval of the Treasury resulting in delay and constant friction between the stability minded Treasury and development oriented EPU and operating agencies. The setting up of autonomous statutory corporations is only a partial answer to the problem.

In 1965, the Development Administration Unit of the Prime Minister's department was asked to look into the matter. As a result, a number of infructuous controls were removed and a Financial Management System's Unit was set up to examine critically the financial management procedures, to introduce gradually Programme Budgeting system and to provide Automatic Data Processing services to the Treasury. The Unit has brought about a number of changes in the financial control procedures. Wider financial powers in respect of virement, award of contracts¹³ etc. are given to the operating agencies. Recently, a modified cash accounting system¹⁴ has been introduced. Planning and evaluation cells have been established in each Ministry to undertake pre-investment appraisal and

¹²Milton J. Esman, *op. cit.*, p. 198.

¹³*Treasury Circular No. 5* (1971) on Forward Commitment Authority. Under the present procedure, the controlling officer can authorise the operating agency to call for and enter into contracts in excess of the budgeted expenditure for the year, provided it is within the total estimated cost of the project.

¹⁴This pertains to the expenditure budget only and not to the revenue budget. Under the modified procedure, payments for all supplies delivered and services rendered before the close of the financial year, *i.e.*, Dec.31, but remain unpaid on the date, can be made during the month of January and be accounted as charges to the appropriate head of account. By relating the actual and estimated expenditures for the year it gives a clearer performance picture of the nation and of the operating agency.

scrutiny of projects and to generate unit cost and work load data. But the professional expertise of these units is limited due to the paucity of qualified personnel. The objectwise accounting classification structure has been modified and budget for 1975 will be in accordance with the functional and economic objects classification and coding pattern.¹⁵ It is expected to generate timely, relevant and accurate information to all levels of management and help in arriving at more informed policy decisions. On the whole, the move is towards the gradual introduction of Programme Budgeting. Shortage of trained accountants and other financial officers in the Treasury and operating departments is said to be the main bottleneck in its speedy introduction.

INTER-GOVERNMENTAL POLICY COORDINATION

Besides plan and programme coordination, supervision and control, including financial, there is, under a federal form of government, the problem of inter-governmental coordination in policy matters. Under the constitutional set-up, land, forestry, mining and agriculture are state subjects. But Parliament has the right to legislate on matters relating to the country as a whole. The Constitution provides for a National Land Council. It is chaired by a minister from the federal government. The membership is composed of one member from each state and ten nominated members from the federal government. The Council formulates common policies to secure inter-governmental coordination and its decisions are binding on all the state governments. But the constitution does not vest any penal power with the federal government in the event of non-compliance by any state government. However, the federal government by virtue of its superior financial and manpower resources has been able to obtain a large extent the necessary cooperation from the states.¹⁶ Another factor which helped the centre in this respect is the prevalence of single party rule,

¹⁵*Treasury Circular No. 7 of 1974, Malaysia.*

¹⁶When the Pan Islamic Party was in power in the state of Kelantan, it declined to release state land for federal land development schemes. Instead it had asked for funds to undertake land development schemes on its own.

viz, the Alliance Party now known as National Front, at both federal and state levels.

FARMERS' INVOLVEMENT AND COOPERATION

Last but not the least important problem in the area of agricultural development in the coordinated and timely delivery of production inputs and services at the farm level and that of encouraging the small farmer to participate in the process of development. Cooperatives are the main institutional devices that are adopted in many countries to achieve the objectives. Malaysia also had a system of a single and multipurpose cooperatives functioning under the administrative control of the department of Cooperatives and staffed by generalist officers from federal Government. Mere provision of credit and in some instances, production inputs by the cooperatives was found to be ineffective in increasing agricultural production. Therefore, the government had set up, in 1958, Farmers' Associations under the administrative jurisdiction of the Director General of Agriculture. They are manned by technical officers. They were also developed in areas with high growth potential and around area development programmes of the department. Even though they were initially started for the purpose of providing extension they started undertaking other functions such as supply of credit and physical inputs like fertilisers, seeds, etc., which were considered essential for increased production. Thus two bureaucracies coming under the administrative control of two organisations had been undertaking identical functions and were competing for limited public funds. To avoid duplication of effort and interdepartmental rivalry the government had established in 1973 the Farmers' Organisations Authority, a statutory body, under the overall control of the Ministry of Agriculture and Rural Development. Under the FOA act, the Cooperatives and Farmers' Association are integrated and commonly termed as Farmers' Cooperatives.

FARMERS' ORGANISATION AUTHORITY

The FOA is at national, state areas and local level. The organisational structure of the Authority is given in charts 2, 3 and 4. It is interesting to note that representatives from

almost all the organisations dealing with agriculture and rural development besides those from Treasury and the Prime Minister's department are included in the Farmers' Advisory Council. The main function of the Council is to advise the Minister on matters relating to the development of Farmers' Organisations.

At the apex level the FOA is headed by Director General. At the state level, State Director of Agriculture acts as State Director of FOA. At the regional level there are Farmers' Development Centre and at the local level a Farmers' Cooperative. The Farmers' Development Centre is based upon the concept of integrated area planning and development. Each Farmers' Development Centre is located in a well defined geographical areas, usually covering 5,000 to 10,000 acres involving 1,000 to 2,500 farm households. At present there are

Chart 2

NATIONAL HEADQUARTERS ORGANISATION STRUCTURE OF FARMERS' ORGANISATION AUTHORITY

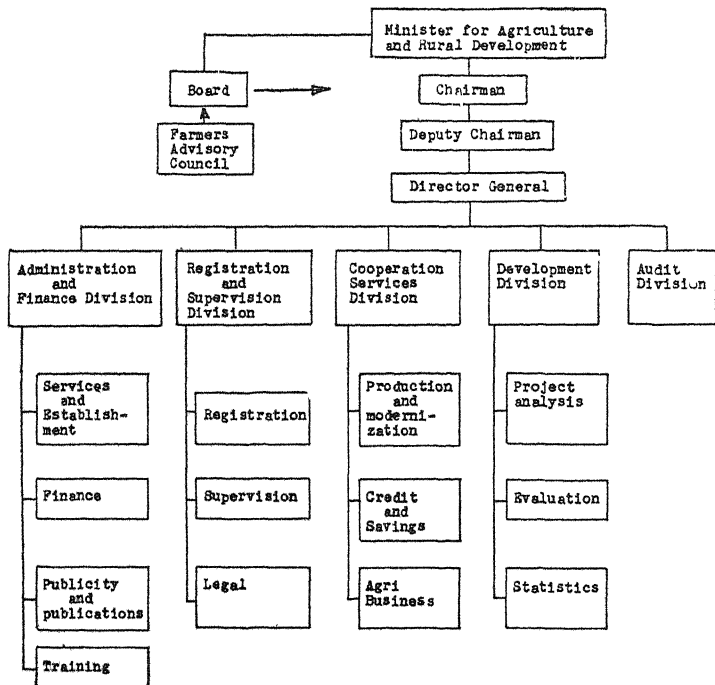
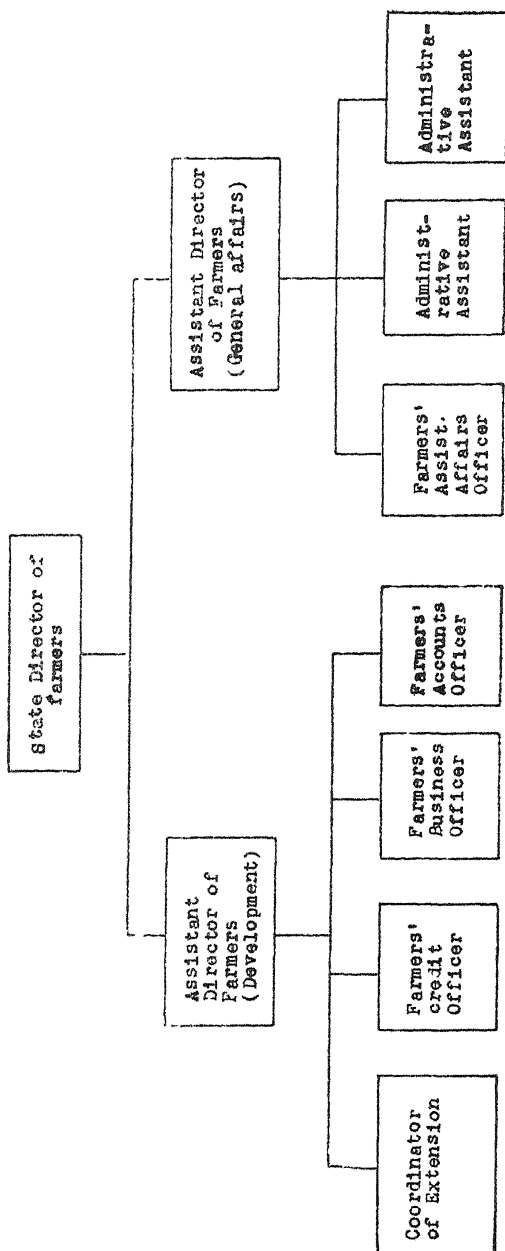
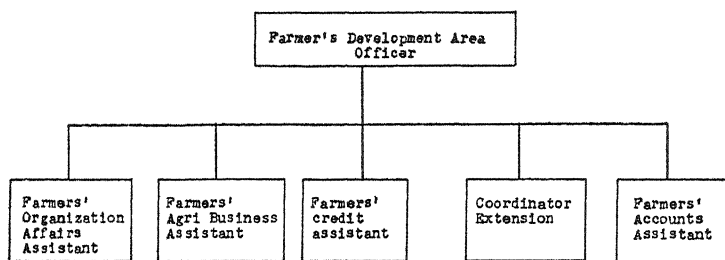


Chart 3
STATE LEVEL ORGANISATION STRUCTURE OF FARMERS' ORGANISATION AUTHORITY



169 such Farmers' Development Areas and the FOA is charged with the responsibility to establish another 41 such areas by 1980.¹⁷ Since land is a state subject, the demarcation of the area is to be done with the approval of the concerned State Government. Some State Governments are said to be reluctant to demarcate the Areas as it amounts to conceding their authority through a federal agency, to the national government.

Chart 4
ORGANISATIONAL STRUCTURE OF FARMERS'
DEVELOPMENT CENTRE



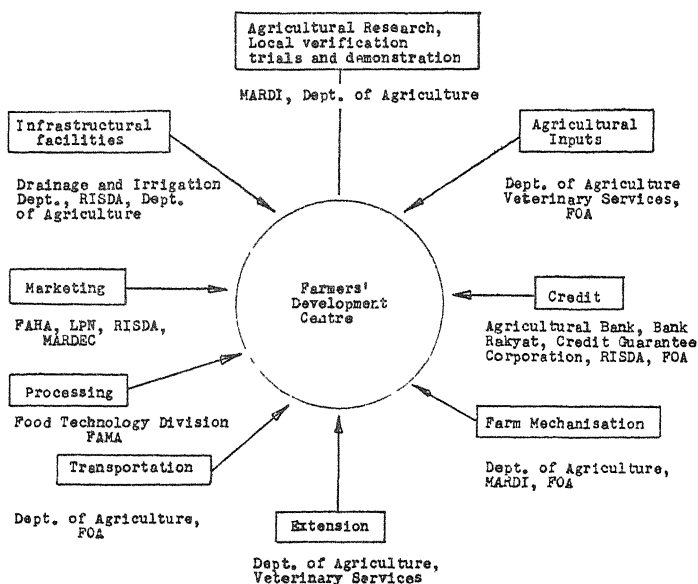
FARMERS' DEVELOPMENT CENTRE

The Farmers' Development Centre (FDC) is the main instrument evolved for the socio-economic development of the area in general and for coordinated delivery of inputs and services to the farmers in particular. It is charged with the responsibility to organise the farmers in a big way so that they are involved in the process of development and to provide extension and training, credit, marketing, transport, mechanisation and processing services to farmers. The FDC undertakes directly those activities which are not provided by other agencies and supplements and coordinates the services that are already provided by other agencies. The linkage relationships of the various agencies with the FDC are shown in chart 5. Farmers' Development Area Officer is in charge of the FDC. The staff of the Centre is provided by various organisations dealing with agriculture besides those provided by FOA.

Every Farmers' Development Centre has two types of membership—individual members (not affiliated to any

¹⁷ *Farmers' Organisation Authority, Malaysia, 1974.*

Chart 5
COORDINATION OF FUNCTIONS AT THE FARMERS' DEVELOPMENT CENTRE



farmers' cooperative) and member units (Farmers' Cooperatives). The rationale in allowing the individual members is said to appear to encourage those farmers who are not members of cooperatives to take advantage of its services and to gradually create a membership group without affiliative linkages to the erstwhile farmers' associations and cooperatives. The Board of Directors of the Centre are elected by the members and are responsible for its policy and functions.

DELIVERY OF SERVICES AND INPUTS AT FIELD LEVEL

Muda area is explicitly excluded from the jurisdiction of FOA. But FDCs are functioning there under the overall control of the Muda Area Development Authority. The manner of providing supervised credit and inputs to farmers by ADC in the Muda area is more systematic than elsewhere and is given below. A farmer can apply for credit/inputs either directly or through his cooperative to the FDC which acts as a local credit centre (LCC) to the Agricultural Bank of Malaysia. The amount of credit, the manner of its supply and timing are deter-

mined by the extension staff of the department of agriculture and MADA. On presentation of his application for credit along with the recommendations of the extension officer, the farmer gets credit from the LCC in the form of a coupon. He can exchange the coupon at the registered stockists and contractors and get the recommended supply of inputs at the time and in the manner mentioned therein. The responsibility for repayment of the loan lies with the FDC. One of the conditions of the loan is that the farmer shall sell his produce through the FDC which acts as a local agent to the Federal Marketing Authority. The linking of credit with marketing at one organisational point is to ensure recovery of the loan. But in actual practice, there are instances where the farmers diverted their produce to private dealers. In such cases, the policy of Muda Agricultural Development Authority is to make the FDC sue the concerned farmer. It is hoped to discourage such practices.

In the Muda area, FDC also provides the farmers with transport, marketing processing and training facilities. Officers of the Federal Agricultural Marketing Authority and the National Paddy Board who are posted at FDC, provide the necessary marketing and processing guidance and help. The FDCs maintain transport vehicles, and other mechanised implements and rents them to the farmers. They organise training courses for farm youth in handling and maintenance of machines. On the whole it is an integrated planning approach to area development and MADA coordinates the policies and programmes of other governmental agencies in the area.

The FDCs, in other parts of the country, are also expected to perform the same functions in the demarcated Farmers' Development Areas under the overall supervision of the FOA. Their success depends to a large extent upon their ability to command, as in Muda area, adequate personnel and financial resources and the type of guidance and supervision provided by FOA. Another important factor is the problem relating to the staff of other organisations provided to the Farmers' Development Centres. The issue to be resolved here is the administrative authority to be exercised by FDC over the staff. It is to be decided whether the staff will maintain line

responsibility to their parent organisation (as is probable) or to the ADC. ADC staff will probably reflect at the area level the complexities of coordinating the activities of various agencies at the national level. Another important factor is that the functioning of FOA depends to a considerable extent upon its effectiveness in resolving the conflict between the generalist and specialist staff recruited by the erstwhile cooperatives and farmers' associations.

CONCLUSION

It is evident from the foregoing analysis that management of agricultural development which is an intricate task is made more so due to the constraints imposed by the socio-economic framework of the country. The mutually contradictory nature of the objective, viz., rapid economic growth with social justice, is also adding to the complexity of the problem. Under such a situation, the board strategy of the government to achieve national unity is through increasing overall income and employment levels and through restructuring of the economy. The Government has chosen agricultural sector as the main instrument to attain its objective of economic growth with social justice.

The Government's production, pricing, marketing, credit and extension policies are in tune with the national objective and strategy. But in the area of structural reform, the Government's attempt is restricted to the creation of a large number of economically viable small farms. No attempt is made to prevent subdivision of holdings through modification of inheritance laws. However, in FELDA schemes steps are taken, through the insertion of a specific clause in the agreement, to prevent subdivision of holdings at a future date.

Another local institution which still harbours traditional values to the production process and which is not touched upon is the system of *Zakat* payment¹⁸ in the paddy growing

¹⁸*Zakat* is a system of payment by the farmers to the religious head, a certain portion (usually 30 per cent) of the produce. It is prevalent in rice growing areas only. A farmer owning more than six acres of paddy land has to make *Zakat* payment. In calculating the payment, it does not take into account the number of dependents (married daughters and sons

(Continued on p. 318)

areas. It needs reformulation as it acts as a disincentive to the farmer to invest in new technology and increase agricultural production.

In the area of planning, besides setting up and strengthening State Planning Units it is essential that the federal government indicates in advance however roughly it may be, the likely quantum of resources that will be made available to the state and district administrations. Otherwise planning at the lower levels tends to be unrealistic.

The system of policy and plan coordination by the National Economic Council, the National Development Planning Committee and the Inter-Agency Planning Group and programme coordination and control by the National, State and District Action Councils and Development Committee are quite effective because of the interlinking of their memberships.

The setting up of area level organisation like MADA and FELDA restricts the scope of the district administration as these organisations undertake the developmental functions of the district authorities. The setting up of the FOA and the FDCs also presents to some extent the same problem. Besides limiting the scope of district authority, multiplicity of organisations also result in duplication of effort and pose problems of coordination. Considerable scope exists for streamlining the functions of the various organisations. It is essential to consolidate and make effective use of scarce financial and manpower resources of the country.

(Continued from p. 317.)

etc.) on the holding. As the inheritance laws are based upon the *fariat* system, the number of people depending on the farm are usually large. The system, therefore, places a burden on paddy growing farmers and will act as a disincentive in the introduction and adoption of fertiliser-based, high-yielding varieties of paddy.

M. Sadiq Malik

Management of Agriculture in Pakistan*

SOCIO-ECONOMIC BACKGROUND

General

Pakistan has an agrarian economy with about 75 per cent of its population living in a complex of 39,000 villages scattered over an area of 310,403 sq. miles. Two-thirds of the gross area is occupied, in the north and west, by hills varying in elevation from 2,000 ft. to 20,000 ft. The average annual precipitation is 125 cms. in the extreme north which goes on decreasing towards the south, some of the areas in the south-west receiving only 12.5 cms. in a year. The soil is generally shallow and infertile over the greater part. With growth in population even the subsistence agriculture is becoming quite difficult here. Forced tillage of sloping land in the hilly tracts has resulted in denudation of natural vegetation, giving rise to widespread erosion, damaging the productivity of arable lands in the plains down below.

The rest of the country broadly designated as the 'Indus Basin', has a plain topography and has to bear most of the brunt of the population. The average annual precipitation in this tract varies as under :

16 per cent area	=	less than 20 cms.
50 per cent area	=	20-37.5 cms.
the rest	=	37.5-75 cms.

This too comes mainly in heavy downpours in two short spans of July-August and December-January. The temperature

*The views expressed in this paper are that of the author and do not necessarily represent official views of Government,

variations are quite wide and the drought periods well pronounced.

Population

Pakistan has a population of about 73 million people which is growing at the rate of 2.9 per cent per annum. Nearly 53 million live in the rural areas and earn their living from hoe and sickle. Census carried out in 1971 indicates that 57.3 per cent of the total population is engaged in agriculture, 12.5 in manufacturing, 9.9 per cent in wholesale and retail trade, 7.3 per cent in community and social services and the rest in transport, storage, construction, etc. Total labour force in the country is estimated at 20.17 million persons. Those employed in agriculture, forestry, hunting and fishing are 10.19 million. It has been estimated that there is an addition of about 200,000 labourers to agriculture sector annually (See Annexure I).

Land-use Statistics

Uptodate statistics on land use in Pakistan are not available. However, an idea can be had from the following statement for the year 1969-70:

	<i>Million acres</i>	<i>Percentage</i>
(a) Area for which land use statistics are not available	67.85	34.2
(b) Forests	4.55	2.2
(c) Not available for cultivation	50.40	25.6
(d) Culturable waste	28.31	14.1
(e) Cultivated area	47.53	23.9
Total	198.64	100.00

Areas for which land use statistics are not available, lie mostly in Quetta, Kalat divisions and Tribal areas in the North-West.

Water Resources

More than one hundred years of intensive irrigation development in the Indus Basin has resulted in the world's largest

canal systems in Pakistan. It extends over 38,000 miles of canals and distributaries which deliver water to an area of 31.7 million acres through 88,000 individual water courses having a total length of approximately 200,000 miles. Large link canals, transfer water from one river system to another. Storage reservoirs, including the world's largest earth-filled dam at Tarbela, are designed to even out the seasonality of river flows. Annual diversions into this system are approximately 100 million acre feet (MAF) of water out of the total of 140 MAF in the river system. More than 100,000 private and public tubewells pump an additional 20 million acre feet of water into the system each year. Three million individual farms with a median size of about 12 acres utilise this water supply for crop and forage production.

Land Tenure

There are about 3.76 million farms in the country of which 2.56 million are below 12.5 acres and about 93 per cent below 25 acres in size. About 64 per cent of the farms in the size of 7.5 acres and less have a total farm area of only 12 per cent.

Forty two per cent of the farms are owner operated, 24 per cent owner-cum-tenant and 34 per cent tenant-operated. The variation in farm size is greatest in the case of owner operated units as compared to others (Annexures II and III).

The smaller farms are more intensively cropped than larger units. In 1972, units below 7.5 acres had a cropping intensity of 139 per cent compared with 119 per cent for farms between 7.5 to 12.5 acres and 88 per cent above 150 acres. (Annexure IV). Contrary to the general belief, negative correlation between size and intensity indicates a greater responsiveness on the part of small farmers to production-increasing techniques.

Agriculture Production

In 1950's, rate of agricultural growth in Pakistan was about 1 per cent per annum. In early 1960's it increased to 3.4 per cent while in late 1960's it touched 4.5 per cent. During the period 1970-75, average annual growth rate in the agriculture sector was less than 1.5 per cent compared to the population growth rate of 2.9 per cent.

With the introduction of high yielding varieties, expanded

use of chemical fertiliser and rapid increase in the number of tubewells, production of major crops in Pakistan increased dramatically in late 1960's. Between 1966 and 1970, production of wheat in Pakistan (then West Pakistan) increased from 3.8 million to 7.1 million tons and that of rice from 1.20 to 2.3 million tons. After 1970, however, increase in crop production has not been commensurate with growth in population. First estimates released for 1975-76, however, put wheat production at more than 8.1 million tons, indicating a healthy upward trend again, but still almost 900 thousand tons short of demand. Production of rice in 1975-76 has increased from 2.3 to 2.5 million tons only. On the other hand, production of other major crops such as cotton, sugarcane, coarse grains and pulses has stagnated over the past decade. Trends in the production of major crops during 1973-74 to 1975-76 are indicated in Table 1.

TABLE 1
AREAS AND PRODUCTION OF MAJOR
AGRICULTURAL CROPS 1973 TO 1976

Crops	('000 acres/tons)					
	1973-74		1974-75 (Final estimates)		1975-76 (Final estimates)	
	Area	Production	Area	Production	Area	Production
Wheat	15,105	7,508	14,363	7,552	15,191	8,200
Rice	3,736	2,416	3,964	2,277	4,276	2 544
Cotton	4,559	649	5,019	625	4,576	505
Maize	1,563	755	1,516	735	1,534	790
Gram	2,738	601	2,407	527	2,475	528
Sugarcane	1,595	23,533	1,663	20,906	1,728	26,146
Rape Seed and Mustards	1,331	288	1,116	244	1,145	244
Tobacco	115	65	134	75	N.A.	N.A.

Relative Growth in Agriculture and Industry

During the past 5 years average annual growth rate was 4.4 per cent for major agricultural crops and 2.2 per cent for the rest of agricultural commodities. In the industrial sector, annual growth rate for the same period was 5.6 per cent large scale industries and 2.5 per cent for small scale manufactures. Targets envisaged for the period 1975-80 indicate an annual increase of 8.5 per cent and 6.0 per cent for major and minor crops and 12.0 per cent and 2.9 per cent for large scale and small scale industry respectively.

This shows substantial and balanced growth rates envisaged both for agriculture and industry which being mostly inter-dependent will receive equal importance and proportionate share in the national development plans.

Relative growth rates in agriculture and industry are given in table 2 below:

TABLE 2
GROWTH RATES AND TARGETS IN AGRICULTURE
AND INDUSTRY

(in million Rs.)

1959-60 prices

	1969-70	1974-75	Growth rate % 1974-75 1969-70	1975-80 target compound annual	Growth rate annual target 1975-80
<i>Agriculture</i>	12,574	14,790	—	21,300	—
1. Major crops	(7,553)	(9,226)	+22.2	(13,840)	+(8.5)
2. Others	(5,021)	(5,564)	+10.8	(7,460)	+(6.0)
<i>Industry</i>	5,156	6,417	—	10,540	—
1. Large scale	(4,042)	(5,164)	+27.8	(9,100)	+(12.0)
2. Small scale manufacture	(1,114)	(1,253)	+12.5	(1,440)	+(2.9)

Principal Agriculture Imports and Exports

Pakistan's exports remain heavily concentrated in rice and cotton, including cotton products. In the FY 1974 export of nearly 600,000 tons of rice earned about \$230 million representing 20 per cent of the total export earnings. During FY 1975 rice is estimated to earn a foreign exchange of \$280 million.

The export of raw cotton, yarn and cloth earned \$378 million in FY 1974. The 1975 cotton exports are however estimated at \$335 million only.

In the last 2-3 years, the value of imports of basic food particularly wheat, edible oils and other raw materials such as fertilisers, insecticides, fuel, etc., have been equal to nearly half of the total foreign exchange earnings. Internally subsidisation of basic foods and fertilisers is a serious drain on the exchequer.

The composition of Pakistan's exports and imports of principal agricultural commodities is given in Table 3.

GNP Growth and Share of Agriculture

The first 5-Year Plan envisaged 9 per cent increase in food-grain crops and 15 to 33 per cent in cash crops, but the objectives could not be achieved for various reasons. During the second plan period (1960-65), GNP growth was recorded at 30.4 per cent with 14.8 per cent increase in per capita income. Growth in agriculture sector was 3.4 per cent compared with the previous 1.3 per cent, whereas growth in industry was about 12.3 per cent per annum. The increase in foodgrain was, however, less as compared to each crop. The third Five Year Plan (1965-70) although got off a poor start mainly because of War with India in 1965 followed by two years of severe drought yet the introduction of high yielding varieties of wheat and rice with increased use of fertilisers and tubewell water placed agriculture growth at the rate of 4.5 per cent. Fourth Plan (1970-75) also witnessed unhealthy beginning because of civil strike in East Pakistan and ultimately the division of the country in 1972 creating foreign exchange problems. Because of new situation, The Fourth Plan was implemented in the form of Annual Development Plans. The GNP growth and sectoral share in GNP is given in Tables 4-A and 4-B respectively.

TABLE 3

COMPOSITION OF PAKISTAN'S EXPORTS AND IMPORTS
OF PRINCIPAL AGRICULTURAL COMMODITIES

(Rs. in million)

	1965-66	1970-71	1974-75	1975-76 (July-March)
<i>(a) Exports</i>				
1. Fish and preparations	49.4	61.3	156.5	209.3
2. Rice	132.5	173.0	2,303.7	1685.8
3. Raw cotton and waste	296.8	284.8	1,562.5	878.8
4. Cotton yarn and thread	102.2	357.0	508.8	1,078.2
5. Cotton fabrics	147.9	311.3	1,312.5	915.9
6. Tobacco and raw manufactures	0.7	14.4	132.6	146.5
	727.5	1191.8	6376.6	4914.5
Pakistan total exports	1,203.6	1,998.4	10,286.3	8,096.9 (9 months)
<i>(b) Imports</i>				
1. Animal and vegetable oil fats	81.8	135.1	1,359.8	599.4
2. Grains pulses and flour	233.4	75.7	2,470.1	1,250.7
3. Fertiliser	56.1	177.6	1,022.0	83.9
4. Others (Tea, spices, sugar and textile manu- factures)	57.9	27.2	837.8	586.6
	429.2	415.6	5,689.7	2,520.6
Pakistan's total imports	2,880.3	3,602.4	20,925.0	14,119.01 (9 months)

SOURCE : Pakistan Economic Survey 1975-76, Government of Pakistan,
Finance Division, Economic Adv. Wing, Islamabad.

TABLE 4A
GNP GROWTH FROM 1969-73 TO 1975-76

	GNP (crores* Rs.)	Per capita Income (Rs.)	GNP growth rate %
1969-70	3230.4	541	0
1970-71	3229.6	525	(—)0.4
1971-72	3274.5	516	(+)1.4
1972-73	3515.3	539	(+)7.4
1973-74	3712.6	546	(+)5.6
(revised)			
1974-75	3830.0	544	(+)3.2
1975-76 (Provisional)	4020.1	522**	(+)5.0

*Crore=10 million

**Population estimated at 72.37 million, *Pakistan Times*, June 24, 1976

TABLE 4B
SECTORAL SHARE IN GNP

Sector	1974-75 (Revised) (crores Rs.)	1975-76 (Provisional) (crores Rs.)	Growth rate % 1974-75 1975-76
(i) Agriculture	1308	1360.1	+3.9
(ii) Major crops	(745.5)	779.0	+4.5
(iii) Minor crops	(164.2)	172.8	+5.2
(iv) Others	398.8	408.3	+2.4
Total GNP	3830.0	4022	+5.0
Agriculture per cent of GNP	34.2%	33.8%	

Income Distribution

Studies on income distribution reveal that the average monthly income of a household during 1970-71 in rural area was a little less than \$ 21.0 against \$ 31.7 in the urban areas. In 1971-72 the monthly income of a household in rural areas was Rs. 234.43 compared to Rs. 360.54 in the urban areas. Statistics given in Table 5 will highlight the variations in income distribution in rural and urban areas :

TABLE 5
INCOME DISTRIBUTION IN RURAL AND URBAN
AREAS DURING 1971-72

<i>Monthly income per household</i>	<i>Per cent of all household</i>	
	<i>Rural</i>	<i>Urban</i>
Less than Rs. 200	52.4	28.4
Rs. 200 to 399	38.6	46.9
Rs. 400 to 499	4.3	8.9
Rs. 500 to 799	3.1	8.9
Over Rs. 750	1.6	7.0

Governmental Expenditure on Agriculture Allied Infrastructure

In the past, due share has not been provided to agriculture sector in the GOP expenses. Somehow industrial sector has always been able to absorb a much higher proportion. The present Government, has realised the need to increase agriculture production at a rate at least compatible with population growth. A sizable share of the funds have therefore been allocated to agriculture and allied sectors in the Annual Development Programme (ADP). Table 6 will indicate GOP investment in the Agriculture sector.

TABLE 6
SECTORAL DISTRIBUTION OF ADP 1974-75 AND
1975-76

<i>(in million rupees)</i>		
<i>Sector</i>	<i>1974-75</i>	<i>1975-76</i>
Agriculture	997.91	1,225.24
Water	892.60	1,335.96
Power	1,302.37	2,072.21
		{ excluding Tarbella Project
Industry	1,276.08	2,492.91
Fuels	382.79	824.13
Mineral	27.42	73.54
Transport and communication	2,088.79	2,413.34
Physical planning and housing	728.33	1,092.32
Mass media	—	88.60
Education and training	485.67	636.63
Health	309.00	648.57
Population planning	145.00	189.49
Social welfare	27.95	31.56
Manpower and employment	14.66	18.23
Peoples Works programme	109.82	211.44
Provision for new schemes	—	12.00
Total (sectoral programme)	8,788.31	13,365.47

GOVERNMENT POLICIES AND STRATEGIES IN RESPECT OF AGRICULTURAL DEVELOPMENT

Goals of National Development and Place of Agriculture in National Economy

Since 1971, Pakistan's development planning has addressed itself to the removal of worst aspects of poverty, provision of basic social services and improving the cohesiveness of the economy. The principal objectives of national development are :

- (i) To ensure a diet, an environment and medical coverage which provides for a well-fed and healthy people.
- (ii) To provide, to the extent possible, adequate clothing and other essentials; and, in addition, recreational facilities and such other comforts as make life worthwhile.
- (iii) To provide universal and purposeful education at all levels to attain literacy, efficiency and the capacity to train the people for such changes in occupation that the needs of the future may dictate.
- (iv) To generate employment in such numbers and such ways that the population may live a full life and afford the amenities of life which earlier objectives imply.
- (v) To integrate the various regions of the economy by massive investments in multisectoral disciplines.
- (vi) To bring about a major expansion of basic and engineering industries to strengthen our economic capability and create modern skills and technology in the country.

In these areas, gap between the resources and the aspirations is too wide to bridge in a few years. However, the plans are ambitious enough to make visible improvement in the living standards of the people within a span of five to ten years.

Place of Agriculture in National Development of Pakistan

Agriculture is Pakistan's basic industry. Even the industrial sector, rests to a large extent on what the agriculture sector produces. It has, therefore, been recognised at all levels that unless agricultural production increases appreciably,

national development with a balanced industrial growth is not possible. A number of study groups and Agricultural Commissions have been set up in the past to identify the problems facing agriculture and to suggest remedial measures. The policy guidelines which flow from the analysis and their reports are:

- (a) Provision of cheap and adequate fertiliser, plant protection and irrigation water;
- (b) A dynamic plant research programme for evolving new cultivators and standardising cultural practices;
- (c) A hard-hitting and effective extension service;
- (d) Sound price support, marketing and credit programme;
- (e) An agrarian reform programme oriented towards creating profitable holdings;
- (f) A vigorous search for a relevant technology for the rainfed areas; and
- (g) Land development activities.

The Government have decided to accord high priority to the Agriculture sector not only in the development plans but also in resource allocation. In the federal budget 1976-77, agriculture sector has been allocated Rs. 771 million as against Rs. 683 million during 1975-76. This includes expenditure on agricultural research, subsidy on fertilisers to the tune of Rs. 370 million, plant protection, rice husking and processing, storage and fruit processing and enhancement of lending capacity of the Agricultural Development Bank by Rs. 20 million.

The Government is fully determined to ensure fair and remunerative prices to the agriculturists for their produce. The support price of cotton has been raised from Rs. 215 per maund (88.2 lbs) to Rs. 300 per maund for the next cotton season (1976). The principle of price support has also been extended to some minor crops such as maize, potatoes and onions. Government have also removed export bans on vegetables, eggs and poultry to ensure better returns to the producers thus giving an incentive for higher production. Government has also rationalised the system of disposal of tractors. Provision has been made for the import of 15,000 tractors with auxiliary equipment and spares to meet the power shortage.

Many other policies, political, fiscal and social, have been framed which cover the entire gamut of agriculture production, fruit and nutrition, storage & marketing, price stabilisation, etc.

Below is a brief description of a few government policies and programmes directly affecting agricultural growth

Land Reform: The past system of land ownership and cultivation had resulted in the concentration of 25 per cent land in the hands of 3 per cent people. This was not conducive to increased agricultural growth.

To remove these inequities, Martial Law Regulation 115 was promulgated in 1972. The objectives was to break concentration of landed wealth, reduce income disparities, increase production, and reorder the tenant landlord relationship. Pursuant to these goals, ML 115:

- (i) Set a legal ceiling on size on holding expropriating extensive holdings without compensation and transferring to tenants and owner-cum-tenants with less than subsistence holdings.
- (ii) Restructured tenant-landlord relationship regarding inputs, requiring the landlord to pay 100 per cent of all land taxes, water charges, and seeds costs, and 50 per cent of fertiliser costs.
- (iii) Increased tenant security by prohibiting arbitrary eviction.

However, the impact of land reform to-date has been limited because legal land holding ceilings have been set very high, ceiling apply to the individual (not to families) and for many reasons implementation has been only partial.

Price Policies and Subsidies: As we decided to break from traditional methods, agricultural production became increasingly complex. It was realised that canal water alone was no longer sufficient. Tubewells were needed to supplement flow irrigation which were subsidised alongwith electricity, for their operation. The HYV required more fertiliser so that too was subsidised to keep production costs down. When tractors and machinery appeared to be a limiting factor, they were subsidised. Bulldozers and other heavy equipments were imported and provided to farmers for land clearing and levelling at a small fraction of costs. The Government subsidised pesticides and on some crops provided free aerial spray. In 1972 the special exchange rates for many imports (a form of subsidy), was changed to uniform rates. For many agriculture inputs this meant a change from Rs. 4.75/\$ to Rs. 10.00/\$. In 1975,

land revenue on small holdings not exceeding 12 acres was remitted.

As the subsidy cost grew too large, the Government of Pakistan tried to cut costs by raising prices of fertilisers and pesticides. For fertiliser a 25 per cent increase in domestic price followed shortly after the rupee devaluation in May 1972 (Rs. 28 to 35 for a bag of urea). This was followed by another increase in April, 1973 to Rs. 42/bag of urea, then to Rs. 55 in the fall of 1973 and to Rs. 75 in April 1974. Thus total increase was 165 per cent between September 1972 and April 1974. In general, crop prices were not permitted to rise as rapidly. Incentives for fertiliser use in major crops declined and consumption, which had accelerated rapidly before, grew much more slowly, increasing from about 310,000 nutrient tons in 1969-70 to 423,000 nutrient tons in 1974-75 (about 7 per cent/year). The recent step of cutting the price of 4-7 rupees a bag of different fertilisers has resulted in relatively higher consumption (sales) for kharif 1976.

To stimulate wheat production, the Government announced a wheat procurement price increase of 45 per cent in September 1974, thereby restoring fertiliser/ wheat price relationships to approximately those existing prior to devaluation. Prices of some crops were not so favourably treated. With world cotton prices very much depressed, cotton export duties were removed and prior year prices continued—prices which previously were relatively favourable. Cotton seed oil prices were raised. Sugarcane prices were increased from 4.25-4.50 to Rs. 4.75 Rs. 4.90 per maund. Rice prices (fine and coarse variety) were increased from Rs. 62 to Rs. 90, and Rs. 26 to Rs. 40 per maund, respectively. Periodical increases in the prices of farm produce are indicated in Table 7.

Credit: Previously farm credit used to come mainly from non-institutional sources. In 1970 the principal agent in institutional credit was the Agricultural Development Bank which in that year made loans valued at Rs. 90 million. A programme was started in 1970-71 to expand credit, concentrate more on short-term production loans and channel them to small farmers. This produced significant change by 1973-74. While credit from the Agricultural Development Bank of

TABLE 7
GOVERNMENT DECLARED PRICES OF SOME FARM
COMMODITIES

(Rupees per maund)

<i>Crop</i>	<i>1971-72</i>	<i>1972-73</i>	<i>1973-74</i>	<i>1974-75</i>
Wheat	17.00	22.50	25.50	37.00
Rice Basmati	38.00	46.00	62.00	90.00
Rice Coarse	20.00	21.00	27.00	40.00*
Sugarcane				
—Sind	2.65	4.40	4.40	5.40
—Punjab	2.50	4.25	4.25	5.25
—N.W.F.P.	2.25	4.00	4.00	5.00
	52.00	65.00	90.00	80.00
Cotton**				to 90.00

* The price of irri—6 rice was raised in the Punjab to Rs. 48 per maund in the first week of November and in Sind in the second week of December for rice with tolerance limit of 15 per cent and rejection limit over 20 per cent

**Open market prices.

Pakistan increased from Rs. 93 million to 416 million, the composition of its portfolio also changed; short-term credit increased from 12 to 74 per cent and long-term credit declined from 72 to 29 per cent. Meanwhile credit going to smaller owner-operators (0-12.5 acres) increased from 8 per cent to 26 per cent and landless tenants' share rose from 5.6 per cent to 43.5 per cent of the total.

In December, 1972, the National Credit Consultative Council (NCCC) was established and charged with the responsibility of determining national credit priorities. Each year, with the assistance of the Agricultural Credit Advisory Committee (ACAC), the NCCC sets an overall agricultural credit supply targets and individual targets for each institutional source. These targets are then disaggregated into categories by function of loan, size of farm, and geographical location of borrower. Priorities are determined within each of these cate-

gories. While these targets are usually not fully met, the NCCD has successfully affected a reordering of agricultural credit priorities.

The current land ownership requirements precludes tenants obtaining credit unless they can get sponsorship by a land owner. Passbook system was introduced in September 1973 to facilitate identification and mortgage of land to banks.

Marketing, Storage and Processing : To produce regularity in demand and supply the Government has direct hand in the marketing of agriculture produce through a wide range of price controls, ration distribution (e.g., wheat) and nationalisation of some important marketing and processing activities. A combination of price control, procurement and monopoly export operations are in effect for cotton and rice. Likewise by putting restrictions on the movement of wheat, Government purchases wheat from the surplus areas at declared price.

ADMINISTRATIVE SYSTEM

In Pakistan, agriculture is primarily a provincial subject. Some of its aspects are looked after by the Federal Government and Cooperative Bodies. As a farm business, it has three main supporting arms, namely:

- (i) Commercial agricultural activities that provide farmers with supplies, equipments and credit.
- (ii) Non-commercial activities such as research extension and education for the farmers and agricultural technicians; and
- (iii) An agriculture milieu of price arrangements, fiscal and monetary policies that are conducive to agricultural growth.

The first aspect of farm business is taken care by institutions like Supply Corporations, Market Centres, input resource developing agencies and credit institutions. Non-commercial aspect, i.e., research, extension and education, is the concern of public organisations like the Department of Agriculture, Agricultural Research and Training Institutes, Universities and Colleges imparting agricultural education and training. The last aspect covering policy matters is primarily looked after by the Federal Government's institutions like Ministry of Food and Agriculture, Commerce, Finance and Planning, etc.

A brief account of the structure and activities of the organisations involved in agricultural development is given below:

Federal Organisations

Ministry of Food and Agriculture: The Ministry of Food and Agriculture is the national coordinating body for all subjects related to agricultural development. Planning and policy formulation is its responsibility. It also administers departments of Quality Control and Grading, Plant Protection (Aerial Spray) Soil Survey and Agricultural Research.

The executive head of the Ministry is the Secretary who is responsible for coordination and policy formulation. He is assisted by Agriculture Development Commissioner and his staff. Agriculture Development Commissioner, Deputy Director, Farm Management, Economist and Statistician is responsible for the collection of statistics on crop production, studying international trends in the marketing of agricultural produce and formulation of long-term plans for development of agriculture. Under him there is an Agricultural Census Organisation headed by a Census Commissioner, which carries out economic surveys and compiles reports on land use statistics, tenure system, farm holdings, cattle population, etc.

Agricultural Research Council: At the federal level, there is an Agricultural Research Council which is responsible for the preparation of national plans on agricultural research, development of multidisciplinary research programmes on national and regional basis in cooperation with the provinces and setting up research priorities. The Council is primarily a financing agency for various research projects but now it is taking implementation of some important projects. The Council is also setting up National Research Centres to deal with projects like plant introduction, pest management, arid zone research, etc, Pakistan Central Cotton Committee is another important federal institution conducting research on cotton crop. It finances the Provincial Cotton Research Programmes. Special Assistant to the Prime Minister for Agriculture is Chairman of these organisations. In the discharge of his duties, he is assisted by a Director General and a team of specialists. SAPM (A) is also the Chairman of Pakistan Central Cotton Committee.

Inputs Supply Agencies: Water and Power Development

Authority (WAPDA), National Fertiliser Corporation, Pakistan Agricultural Storage and Services Corporation, Agricultural Development Bank of Pakistan and Commercial Banks are the most important institutions dealing with farm inputs supply.

WAPDA deals with the improvement of water resources, control of salinity and waterlogging, land reclamation, power generation and distribution. The Authority is headed by a full time Chairman, assisted by members dealing with finance, administration, technical matters, etc. The Authority has a separate Wing for water development and land reclamation headed by Chief Engineers. They are assisted by a number of Directors, Project Directors, Senior and Junior Engineers and Specialists.

National Fertiliser Corporation is responsible for pooling the production of various fertiliser units in the country and to arrange import of chemical fertilisers from abroad according to pre-determined requirements. Distribution is organised by it through the Provincial Agricultural Supply Corporations. The Corporation is headed by a Chairman and executed by a Managing Director assisted by General Managers, Deputy General Managers, Managers and field staff.

Pakistan Agricultural Storage and Services Corporation is a semi-autonomous body dealing as a whole sale agent for farm inputs and produce especially wheat, rice and potatoes. The Corporation is headed by a Chairman assisted by Director General, Project Directors and field staff.

Agricultural Development Bank of Pakistan is the biggest source of farm credit in the country. It extends short-term, medium-term and long-term loans to the farming community for the purchase of agriculture inputs. The Bank has its own Board of Directors headed by a Chairman. He is assisted by an Executive Director and a Team of Directors, Deputy Directors, Assistant Directors, Regional Managers and Managers at various levels.

The Commercial Banks have recently started giving agricultural loans, apart from their normal commercial business. The set-up of these banks is more or less identical with the Agricultural Development Bank of Pakistan.

Provincial Organisations

Agricultural Department : Under the Director General (Field) there is Director (Extension), assisted by Deputy Directors at the divisional level, Extra Assistant Directors at the district level and Agricultural Assistants at Sub-district or tehsil level. Contact with the farmers is through Field Assistants who are posted in all Union Councils which is a collection of 6-10 villages. Total number of extension workers employed at various levels is estimated at 5,500 which is about 50 per cent of total requirement. The organisational structure of other Directorates is similar to the Extension Wing except for difference of nomenclature. The Soil Conservation Directorate is responsible for land reclamation, checking soil erosion and popularising moisture conservation techniques. The Wing also provides on hire tractors to the farmers for tillage and land levelling. The Economics and Marketing Directorate is established only in Punjab whereas agricultural offices take care of the subject in rest of the Provinces. The main function at present is the collection of crop/price information, Water Management Directorate look after farm management practices to minimise water losses and make the use of water most efficient and economical. Agricultural Engineering Wing handles both farm power supply and installation of tubewells. For this purpose the Directorate has its field units, established at district and tehsil levels with repair workshops, supervised by Engineering graduates.

Agricultural Education: There is a network of institutions in Pakistan for higher agricultural education. They consist of Agricultural University at Layallpur, 2 Agricultural Colleges one at Peshawar and the other at Tandojam and of one College of Animal Husbandry at Lahore. The total enrolment of these institutions is about 9,000 with a yearly output of 2,000 graduates.

Besides degree Colleges there are quite a few institutions which impart in-service training to professionals and sub-professionals in the field of agriculture cooperative, community development.

Agricultural Research: Except for Agriculture Research Council and a few other institutions which are under the Federal Government all other agricultural research institutes including research stations and sub-stations located in various ecological

zones are constituted by the Provinces. The research programmes, mainly cover six broad fields, *i.e.*, plant breeding, seed multiplication, soil fertility tests, livestock production, animal health, and statistics.

Of the institutes engaged in agricultural research in the Provinces, eight are in Punjab and three each in Sind, North-West-Frontier and Baluchistan. Each of these institutes has its own research programme tailored to meet the requirements of the local farming community.

In most cases, Director General is the overall incharge of a Research Institute assisted by 2-3 Directors. The institutes have different sections or divisions with a subject specialist as incharge of them. In the discharge of their duties they are assisted by a team of Research Assistants who are graduates in specific subjects.

*Personnel Involved in Agriculture Development,
their Recruitment and Control*

Recruitment to different cadres in the agriculture service is done according to set procedures, both at federal and provincial levels. For sub-professionals, specific selection boards make suitable recommendations after interviewing the candidates and making judgement about their qualifications, training and experience in a given field. For instance, Field Assistants in the Agricultural Extension and Research Wings are taken after they have successfully completed two years training in a Government institute. Training is imparted to those who have the minimum qualification of being matriculates.

Higher professional posts are filled up by open competition through Federal/Provincial Public Service Commissions. Minimum qualifications as prescribed under the recruitment rules are rigidly observed.

The Ministries of Agriculture, the Planning Commission/Planning and Development Departments and the Finance Ministries in each Government (Federal and Provincial) are responsible for planning, monitoring and evaluation of the development programmes. Physical execution of programmes is, however, the responsibility of departmental heads. They are vested with sufficient financial and administrative powers so as to enable them to implement the programme successfully. Data

required for planning at different stages come mostly from the field organisations of Revenue and Agriculture Departments.

Programmes Aimed at Target Groups/Small Farmers

Several programmes were formulated and implemented in the past for improving agricultural productivity, providing job opportunities and improving social and physical infrastructure in the rural areas. Prominent amongst them were :

- (i) Village Agricultural and Industrial Development (VAID);
- (ii) Basic Democracies;
- (iii) Rural Works Programme; and
- (iv) Agricultural Development Corporation (ADC).

Each of the programmes dealt with only one or two aspects of rural life and worked independent of other development activities with the result they could not produce the desired impact. Low production of agricultural commodities, concentration of industries in urban localities, migration of population from villages to the towns due to unemployment continued to be the main features of the national economy. This situation led the present Government to review performance of these programmes *vis-a-vis* the small farmers. It was found that because of defective institutional arrangement, the benefits of these programmes were confined mainly to big and medium farmers; who possessed means to gain access to the source of power and did not reach the small farmers who constituted a vast majority of the rural population. Out of this review the new concept of integration of efforts at a level below Tehsil from where the benefits could easily reach the poor in the villages has emerged. This entails development planning on areas basis involving people's organisation concerned, nation building departments and private sector with an intensive effort to provide services and supplies at the door-steps of the farmers.

INSTITUTIONAL INFRASTRUCTURE

Modern agriculture demands a set of activities in private and public sectors that would lead to balanced agricultural growth. Principal agencies and institutions dealing directly or indirectly with the development of agriculture in Pakistan are briefly discussed below;

Research Institutions

Pakistan's first priority thrust in agricultural research is to effectively use the technology developed in other countries. Occasionally imported technology is applied without change, but in most cases it is moulded to fit Pakistan's conditions. For this purpose various research institutions have been established both under Federal and Provincial Governments. The Agriculture Research Council is responsible for the preparation of agricultural research plans, setting of priorities and development of multidisciplinary research programmes on national basis, as also on regional basis in cooperation with the provinces.

The Council has set up a National Research Centre in Islamabad. This Centre takes up integrated programmes in specific areas like Plant Introduction, Pest Management, Barani Farming, Dairy Management, Economic Research and Training, etc.

Agricultural Statistics and Census

The Planning Unit of the Ministry of Food and Agriculture is responsible for issuing estimates on various crops. The Unit fulfils this obligation with the help of provincial Revenue and Agricultural Departments.

Likewise the Agricultural Census Organisation conducts periodic agricultural surveys. The latest census was conducted during 1972 and 1973.

Agricultural Marketing and Grading

The Federal Marketing Department, besides, providing guidance to the Provinces in the field of marketing conducts independent marketing surveys and brings out a number of survey reports. These reports not only indicate the specific problems of marketing but also suggest ways and means for improving the conditions and for laying down coordinated national policies. The Federal Agricultural Marketing Department also formulates national standards of quality for agricultural and livestock products and has introduced grading of a number of commodities under the Agricultural Produce (Grading and Marketing) Act 1937.

Information about wholesale prices of important agricultural commodities is disseminated daily through newspapers and

radio. The prices are compiled on monthly basis and published in the form of monthly Market and Price Bulletin.

Credit Institutions

The Government of Pakistan has established credit institutions like Agricultural Development Bank of Pakistan, Co-operative Banks, etc., and is itself providing 'Taccavi' and distress loans. The Agricultural Development Bank of Pakistan is required to diversify the agricultural loans to achieve a ratio of 70:20:10 between owners of the land of subsistent level, economic level and above economic level, respectively. From 1972, the Commercial Banks have also been asked to participate in agricultural loaning operations. Targets have been fixed for them to lend a given percentage of the total loan for rural sector.

Inputs Supply Agencies

Apart from the Extension Service of the Department of Agriculture, agencies like Pakistan Agricultural Supply and Storage Corporation, National Fertiliser Corporation, Provincial Agricultural Supply Corporation and private agencies at various levels are involved in the distribution of seed, fertilisers, pesticides, etc. Federal Government has recently established a National Seed Council to advise on policy for development, operation and regulation of seed industry, and to guide in administering the seed quality control services. The Provincial Governments are establishing seed corporations for multiplication, procurement and distribution of quality seeds.

The Government have expanded plant protection coverage to check the damage which the pests and diseases cause to the crops. The Government is participating in the plant protection of crops directly as well as assisting the farmers. The aerial spray is done only by the Government and the ground spray is done both by the Government and the farmers. Major crops such as rice, cotton, and sugarcane are being sprayed by aircraft.

During the peak sowing and harvesting periods, agriculture faces an acute shortage of both human labour and drought power which consequently leads to either wastage in the case of crops being harvested or delay in sowing. In addition, intensive

cultivation and multiple cropping require mechanical power to supplement the existing power. Realising this problem the Government have allowed liberal imports of agricultural tractors. The tractors are being sold to the farmers both on cash and loan in the open market. Last year over 7,000 agricultural tractors were imported whereas this year the import is expected to be over 15,000.

Since the farmers cannot afford to buy bulldozers which require huge investment for developing and levelling the land, the Government has maintained a huge fleet of bulldozers which are being hired out to the farmers, through the Agricultural Engineering Department and Farm Service Centres.

Tubewells also fall under the mechanisation programme and the installation is done both under public and private sectors with the object of improving water resource and reclaiming soils from water logging and salinity.

As regards development of animal stock including poultry, the Provincial Animal Husbandry and Veterinary Departments provide the necessary facilities needed. Poultry farming is primarily the concern of the private enterprisers.

Over the past few years although there has been significant progress in bringing supplies of critical inputs within the reach of the farming communities, at least in the intensively cultivated areas, yet the benefits have not trickled down to the small farmers. The beneficiaries have been mainly the big and medium farmers who possessed means to gain access to the source of supplies. This was due to defective institutional arrangement which was tailored to meet the requirements of the privileged segment of the farming community. To remedy the situation, the Government of Pakistan in the year 1972 launched Integrated Rural Development Programme all over the country.

Integrated Rural Development Programme

The concept underlying the programme is:

“To select a production area comprising 50 to 60 villages, mostly with small and medium size farmers with a view to improving their socio-economic status by intensive rural development programme with an initial thrust to increase productivity by providing technical guidance, supervised credit, supply of inputs, machinery on hire, storage and

marketing facilities, etc., based on sound physical, organisational and institutional infrastructure, by intensification, diversification and commercialisation of agriculture through a social cooperative system under a total approach."

The goals of integrated rural development are both economic and social, including many that can be reached only by coordinated action in a number of fields. These include increase in production and productivity, human resources development, increased employment, establishment of agricultural and service institutions, social justice through equitable spread of opportunities and income, higher levels of living and popular participation in development. In our setting where agriculture provides the economic base, the activities aiming a growth in agriculture will be implemented on priority basis followed by projects in social service sector such as general education, health, housing, water supply, transport, etc.

Integrated Rural Development Programme envisages an institutional arrangement whereby the felt needs of the rural community are identified, and duly met through the process of integration of the nation-building departments and other agencies connected with the development of rural economy. This would include meaningful and effective linkage and communication between research agencies and extension staff on the one hand, and the extension services and the rural masses on the other. Similar coordination will be established between the credit institutions and the marketing mechanism.

Institutional Framework of IRDP in Pakistan

(i) *Primary Unit:* The lowest level where farmers can get together for operational performance is the geographical limits of a village. This is a homogenous community which can meet frequently for discussion production plans and development schemes.

(ii) *Markaz:* The real hub of integration activities is the Markaz. It is established at a focal point to provide supporting facilities such as the services of various nation-building departments, banks, supply of inputs, credit, machinery workshops, storage, marketing, rural population of the project area. The village cooperatives are federated at the Markaz level.

The Markaz are our growth points, revolutionary bases and future agrovilles. It has, therefore, been decided to accord TOP-PRIORITY to develop these focal points so that facilities are made available to our rural population close to their villages.

(iii) *District level:* The elected District Council supervises and coordinates the implementation of development projects in the district.

(iv) *Provincial level:* The Rural Development Board presided over by the Chief Minister coordinates and evaluates the work of various departments in the field of rural development. The Board is responsible for policy making, budgeting, approval of plans, coordination and evaluation of IRD Projects.

(v) *Federal level:* At the Federal level, the Ministry of Social Welfare, Local Government and Rural Development is responsible for policy guidance, follow-up action, international assistance, coordination and evaluation of the programme.

The National Rural Development Council under the Chairmanship of Prime Minister reviews the programme quarterly and lay down policy guidelines for the implementing agencies.

The main elements of this framework are as under:

1. The selection of a convenient area-unit of operation called a 'Markaz Area' which would be smaller than the existing administrative units and also a natural developmental growth centre where the activities of the nation-building departments will be coordinated.
2. Making the markaz a centre for training and imparting new technology for the convenience of the village community. The markaz would also provide the channel through which Government policies can be popularised and implemented at the grass-root level.
3. Organising the village communities into formal associations and their federations in the markaz area centred around felt needs and activities. This will ultimately end into local self-government system.
4. Making the markaz a basic unit of economic planning through a comprehensive survey in each of the areas and by preparing Markaz Development Plans.

Integrated Rural Development Programme is, in essence, an arrangement involving a re-positioning of existing departments,

agencies and other organisations in a new juxtaposition resulting in the creation of an inter-linked and inter-dependent framework.

A little reflection would make it clear that the design of the institutional arrangement under IRDP has a built-in potential for having significant impact on agricultural productivity both in the short and in the long-run. This would be made possible through the IRDP structure which would play an important role in the provision of credit, distribution of inputs, construction of small works for land improvement and other physical infrastructure, upgradation of skills, dissemination of improved cultural practices, generating savings at local level and introducing a regional local planning approach. Above all, the programme envisages to reach the small farmers and involve them in the mainstream of economic activity, mobilising thereby, the vast reservoir of human energy and intelligence which at present is being partially utilised.

BIBLIOGRAPHY

1. Government of Pakistan, *Review of Agricultural Production During 1959-60 Through 1973-74*, S.S. XVII Oct. 1974, Ministry of Food, Agriculture and Rural Development (Agriculture Wing), Planning Unit, Islamabad.
2. Government of Pakistan, *Agricultural Development in Retrospect and Prospect*, Ministry of Food, Agriculture & Rural Development (Agriculture Wing-Planning Unit), Islamabad.
3. Government of Pakistan, *Evaluation of the First Two Years of the 4th Five Year Plan (1970-75)*, Planning Commission, April, 1973.
4. Government of Pakistan, *The Budget in Brief, 1975-76*, Finance Division, Islamabad.
5. Government of Pakistan, *Economic Analysis of the Budget 1975-76 (Preliminary)*, Finance Division, Islamabad, June 1975.
6. Government of Pakistan, *Monthly Statistical Bulletin*, Statistical Division, Ministry of Finance (Planning and Economic Affairs), No. 9 & 10 September-October, 1975.
7. Government of Pakistan, *Agricultural Development Policy—IRDP I*, January 1972, Ministry of Food, Agriculture & Under Developed Areas (Project and Coordination Wings), Islamabad.
8. Government of Pakistan, *Report of the Agricultural Enquiry Committee*, Ministry of Food and Agriculture (Agriculture Wing), June 1975.
9. Government of Pakistan, *Budget Speeches for 1975-76 and 1976-77*, Finance Division (Planning & Economic Affairs), Islamabad.

10. Government of Pakistan, *Pakistan Economic Survey 1975-76*, Finance Division (Economic Adviser's Wing), Islamabad, June 1976.
11. Government of West Pakistan, *Agricultural Statistics*, Series No. 1, Crops, Department of Agriculture, Lahore.
12. Haider, A.S. & D A. Khan, *Agricultural Policy Reconsidered* (Unpublished) March 1976.
13. Khan, A.H., Land Reforms in Pakistan 1947-72, Need of the Home Serial 5, N.I.S.E.R., Karachi, Pakistan.
14. Malik, S., *IRDP in Pakistan*, Ministry of Food, Agriculture & Rural Development (Rural Development Wing), Islamabad, November, 1973.
15. Siddiqui, A.J., *Agriculture Extension Service in NWFP*, Pub. 88, Board of Economic Enquiry, Peshawar University, March, 1973.
16. U.S.AID (Pakistan), "Pakistan Economic Development Data", Islamabad, Pakistan, June 1975 (Unpublished).
17. U.S.AID (Pakistan), "Food and Nutrition Sector", Islamabad, Pakistan, December 1974 (Unpublished).
18. U.S.AID (Pakistan), "Rainfed Agricultural Development", Islamabad, (Unpublished).

LABOUR FORCE, EMPLOYMENT AND UNEMPLOYMENT
IN PAKISTAN IN 1969-70 AND 1974-75

(by sector of economy)

(in million person)

	1969-70	1974-75
1. Total labour force	17.55	20.17
(i) Agriculture, forestry, hunting, fishing	9.34	10.19
(ii) Other Sectors	8.21	9.98
2. Total employed and unemployed	17.21	19.76
(i) Agriculture, forestry, hunting, fishing	9.30	10.15
(ii) Mining and manufacturing	2.71	3.26
(iii) Construction	0.51	0.68
(iv) Electricity, water services and gas	0.05	0.06
(v) Commerce	1.39	1.68
(vi) Transport and communication	0.55	0.68
(vii) Services	2.70	3.25
3. Wholly unemployed	0.34	0.41
(i) Agriculture forestry, hunting and fishing	0.04	0.04
(ii) Other Sectors	0.30	0.37
4. Labour force	17.55	20.17
(i) Employment, whole and partial	2.43	2.43
(ii) Unemployment as percentage of labour force	13.08	12.05

SOURCE : Mimeograph "Sectoral Manpower and Employment Estimates
for the Fourth Five Year Plan," Pakistan.

Annexure II

NUMBER AND AREA OF FARMS CLASSIFIED
ACCORDING TO OPERATIONAL FARM SIZE
IN PAKISTAN, 1972

<i>Farm Size</i>	<i>Absolute</i>		<i>Relative %</i>		
	<i>Number of Farms (1,000 acres)</i>	<i>Farm Area (1,000 acres)</i>	<i>Num- ber of farms</i>	<i>Farm Area</i>	<i>Average farm size in acres</i>
Upto 7.5	1,639.0	5,995	44	12	3.7
7.5—12.5	920.8	8,913	24	18	9.6
12.5—25.0	793.9	13,067	21	27	16.6
25.0—50.0	289.2	9,219	8	19	31.9
50.0—150.0	102.6	7,406	3	15	72.2
Above —150.0	16.2	4,485	+	9	277.5
Total	3,761.7	41,085	100%	100%	13.1

+ = Value less than 0.5 per cent.

SOURCE : Government of Pakistan, 1972 Pakistan Census of Agriculture,
Ministry of Agriculture (Provisional data).

Annexure III

CLASSIFICATION OF FARMS ACCORDING TO LAND
TENURE AND OPERATIONAL FARM SIZE
IN PAKISTAN, 1972

					(in per cent)
<i>Farm size in acres</i>		<i>Type of Land Tenure</i>			<i>Total</i>
		<i>Owner</i>	<i>Owner-cum-Tenant</i>	<i>Tenant</i>	
Upto	7.5	54	16	30	100
	7.5—12.5	29	26	46	100
	12.5—25.0	31	32	37	100
	25.0—50.0	38	34	28	100
	50.0—150.0	49	35	16	100
Above	150.0	63	28	9	100
Total Farms (Number 1,000)		1,560	897	1,269	3,762
Per cent		42	24	34	100%

SOURCE : Government of Pakistan, 1972, Pakistan Census of Agriculture, Ministry of Agriculture, (Provisional data).

*Annexure IV*CROPPING INTENSITY ACCORDING TO OPERATIONAL
FARM SIZE IN PAKISTAN 1972—PROVINCE-WISE*(in per cent)*

<i>Farm Size in Acres</i>	<i>Punjab</i>	<i>Sind</i>	<i>NWFP</i>	<i>Baluchistan</i>	<i>Pakistan</i>
Upto 7.5	132	146	146	93	139
7.5— 12.5	117	126	119	80	119
12.5— 25.0	111	116	105	82	111
25.0— 50.0	101	104	91	71	103
50.0—150.0	104	93	77	65	97
Above 150.0	102	86	75	55	88
Overall	112	118	109	71	111

SOURCE : Government of Pakistan, *1972 Pakistan Census of Agriculture*, Ministry of Agriculture (Provisional data).

PHILIPPINES

*Abelardo G. Samonte and
Geronimo M. Collado*

Management of Agricultural Development: the Philippine Experience

In the developing countries of Asia, the majority of the people live in the rural areas and are engaged in agriculture. The agricultural sector serves as the primary food provider, as input supplier to other sectors, and as the major export earner. Thus, for these countries to develop and prosper, agriculture must be managed more effectively. But any effort at improving the management agricultural development must take into account its larger socio-economic environment.

With this in mind, this paper will first deal with the socio-economic environment of Philippine agricultural development. This will be followed by our analysis of determinants and constraints in managing Philippine agriculture. It will then examine the administrative system, including the structure and dynamics of development planning and implementation. Finally, the outputs from that system—particularly the policies and strategies for agricultural development will be discussed.

SOCIO-ECONOMIC ENVIRONMENT OF AGRICULTURAL DEVELOPMENT

Geographic and Political Background

The Republic of the Philippines is an archipelago situated just above the equator, covering some 1,500 kilometers from above 18°N to below 6°N latitude between the South China Sea and the Pacific Ocean. Its neighbour to the north is Taiwan, to the south is Indonesia, and to the west are Malaysia. Thai-

land, Singapur and Vietnam. To the northeast is Japan, and Hawai is far east into the Pacific Ocean.

Some 7,100 islands compose the Philippines, about 880 of which are inhabited and 462 have an area of one square mile or more. The combined surface area is about 29.7 million hectares, slightly less than that of England. The three biggest islands are Luzon (46 per cent), Mindanao (32 per cent) and Visayas (22 per cent).

The 29.7 million hectares (mh) are divided into 7.6 mh under cultivation, 5.5 mh community-industrial-commercial, 4.2 mh idle but potentially arable, and 12.5 mh reserved as permanent forests.

The climate is generally tropical with abundant rainfall especially during the rainy half of the year from June to November (though the pattern varies from region to region). The country is hit by 25-30 typhoons in a typical year, mostly originating from the Pacific Ocean.

The Philippines was a Spanish colony for 400 years, followed by American rule for 50 years, and a 5 years under the Japanese. Finally, in 1946, it gained independence from foreign governance. It adopted a presidential system of government patterned after that of the USA.

The Philippines has been having its share of unemployment, rapid population growth, unequal distribution of income, internal subversion, and other problems characteristic of a modernising society. In the sixties, these problems were being verbalised by an active and vocal studentry and, in 1970-72, unrest steadily led to social tension of crisis proportion; the distinction between a politically-free and chaotic society was increasingly blurred. Political analysts saw only two alternatives for the country. The first was a constitutional sanction vested on the President: he had to decide for the country. If he misread the temper and needs of the Philippine society, he would plunge the country into the second; more violent alternative, a civil war. The situation was such that a "non-decision" would have been a decision for the second alternative. The President opted for the first alternative; the country was placed under martial law on September 21, 1972. Actually, the supremacy of civilian authority over the military has been maintained, but the present regime has enabled the President

of the Republic to act directly and decisively to contain internal subversion and maintain political stability, while instituting sweeping reforms to achieve food self-sufficiency and greater economic productivity, more equitable distribution of wealth and income, government reorganisation and social reorientation vital to accelerated national development.

The Economic Setting

Agriculture has been the biggest single sector of the Philippine economy. However, the contribution of agriculture to the GNP has gradually declined from 30 per cent in 1970 to 23.5 per cent in 1974 in real terms. The next three dominant sectors are services, manufacturing and commerce, in descending order of importance, comprising from 12 per cent to 18 per cent of the country's GNP in real terms (Tables 1 and 2).

The economy's real growth rate has been oscillating at the 5.6 per cent range during the last decade, except for a couple of years. A downward deviation in 1971-72 was caused by a series of natural calamities and civil disorders; the first adversely affected the production of agriculture while the second disturbed the urban commerce, manufacturing and service sectors. In 1973, the economy recovered from those disturbances, as shown by real growth rates of 9.8 per cent and 7.7 per cent for the GNP and agriculture, respectively. This could be attributed mainly to the far-reaching political and economic reforms instituted by the New Society regime—and of course, with a little help from a good weather during that year (Table 2).

The economy's growth record during the recent 7 years was fueled by a real investment rate that averaged 21 per cent of the GNP. The gross domestic capital formation grew at an average of 3 per cent annually, while consumption increased at 4.5 per cent per year, both in real terms.

The manufacturing orientation of the last two decades has been toward import substitution. The burden for export has been placed on agricultural crops. Like most developing countries of Asia, the Philippine economy has remained dualistic as the benefits of progress in the industrial and export sectors have not been equitably diffused toward the rest of the economy. This structural dualism has hindered the expansion of the

TABLE 1
GROSS NATIONAL PRODUCT BY SECTORAL ORIGINS, PHILIPPINES, 1970-74

(in million pesos, based on 1967 prices)

<i>Economic Sectors</i>	1970	1971	1972	1973	1974
Agriculture, forestry and fisheries	8,549	8,556	8,642	9,306	9,626
Mining and quarrying	558	650	686	730	725
Manufacturing	5,108	5,497	5,828	6,488	6,755
Construction	657	678	933	959	1,097
Communication, transportation, and utilities	1,082	1,148	1,210	1,298	1,384
Commerce	4,149	4,357	4,643	4,972	5,197
Services	6,196	6,424	6,732	7,095	7,537
Net Domestic Product at Factor Cost	26,299	27,310	28,674	30,848	32,321
+Net factor income from abroad	(480)	(305)	(383)	(197)	(47)
Net National Income	25,819	27,005	28,291	30,651	32,368

+ Indirect taxes	2,611	3,088	2,991	3,755	4,046
+ Capital consumption allowance	3,249	3,656	3,999	4,345	4,539
	<u>31,679</u>	<u>33,749</u>	<u>35,281</u>	<u>38,751</u>	<u>40,953</u>

SOURCE: National Economic and Development Authority, *Statistical Yearbook 1976* (Manila: NEDA).

NOTE: Foreign exchange rate since 1970 has been P 7.50 for every U.S. dollar.

TABLE 2
CHANGES IN AGRICULTURE AND SELECTED COMPONENTS OF THE GROSS NATIONAL PRODUCT,
PHILIPPINES 1969-70 to 1973-74, BASED ON 1967 PRICES
(all numbers are in percentages)

	1969	1970	1971	1972	1973	1974
<i>Relative contribution of agriculture to:</i>						
Gross National Product	27.9	27.0	25.3	24.5	24.0	23.5
Net Domestic Product	33.0	32.5	31.3	30.1	30.2	29.8
<i>Real growth rates, from year to year:</i>						
Gross National Product	5.5	6.5	4.5	9.8	5.7	
Agriculture	2.1	0.1	1.0	7.7	3.4	
Personal Consumption expenditures	3.0	4.3	3.4	6.7	7.1	
Gross domestic capital information	(1.6)	3.9	2.4	11.0	20.2	

SOURCE: National Economic and Development Authority, *Statistical Yearbook 1976* (Manila: NEDA).

domestic market for consumer goods because majority of the population are in the subsistence rural areas and they have not been fully integrated into the mainstream of economic activities.

The agricultural growth rates has always been lower than that of the whole economy in the last decade. Aside from natural calamities, the other variables that have hindered agricultural growth rates in recent years were generally low productivity of land and labour caused by traditional technology and lack of irrigation, extensive crop infestation, and shortage of capital which has been further heightened by the increasing costs of fertilisers due to the worldwide oil shortage.

Nevertheless, agriculture is still a key industry in the Philippines. Agriculture is the biggest employer among the economic sectors, absorbing over 50 per cent of the labour force (Table 3). And the proportion has been increasing, owing to the relatively higher population growth rate in the rural areas where 80 per cent of population live, and which cannot be adequately absorbed by the non-agricultural industries. Furthermore, agriculture is the source of most of the country's foreign earnings. Of the ten leading exports, seven are agricultural commodities, the other three being gold, copper, and forestry products.

The quality of Philippine statistics leaves much to be desired, however. For instance, the official employment figures showed a mean unemployment rate of only 6.4 per cent per year during 1964-1973. This unusually low figure implies a nearly full-employment economy, which is open to question given the levels and growth rate of national and individual incomes in the last decade. In fact, an International Labour Organisation mission in 1974 estimated that 25 per cent would be a more realistic figure for unemployment.¹ There seems to be a consistent bias towards underestimating both the employable and the unemployed. Furthermore, official figures do not accurately reflect the high rate of disguised unemployment in the rural areas where most jobs are seasonal. This is a classic measurement problem, and classifying disguised unemployment as

1 International Labour Organisation, *Sharing in Development: A Programme of Employment, Equity and Growth of the Philippines*, Philippine edition, Manila, National Economic and Development Authority, 1974, p. 7.

TABLE 3
SELECTED SOCIO-ECONOMIC INDICATORS, 1971-1974,
PHILIPPINES

<i>Indicators</i>	<i>1971</i>	<i>1972</i>	<i>1973</i>	<i>1974</i>
Population (000 persons)	37,847	38,881	39,956	41,072
Density (persons per square kilometer)	126	130	133	140
<i>Labour and Employment</i>				
Labour force (000)	13,241	13,294	14,559	14,283
Labour force participation rate (%)	50.2	48.4	50.4	49.7
<i>Employed (% of labour force)</i>	94.7	94.6	95.2	96.8
Urban	91.3	90.2	92.0	94.3
Rural	96.3	96.7	96.7	98.0
<i>Employment absorption by agriculture:</i>				
Number (000)	6,321	6,863	7,766	7,684
Percentage of all sectors	50.4	54.5	56.0	55.6
Percentage of total labour force	47.7	51.6	53.3	53.8
<i>Per capita income</i>				
In current pesos	1,044	1,164	1,410	1,947
In 1967 pesos	713	728	767	788
<i>Income distribution (as of 1971)</i>				
Annual income levels:	Percentage of all families:			
under P 1,000	17.3			
P 1,000—1,999	24.0			
2,000—2,999	17.7			
3,000—4,999	20.0			
5,000 and above	21.0			
<i>Consumer price index (1965—100)</i>				
All items	160	173	194	286.66*
Food	173	189	214	301.02*
Literacy rate (10 years old and above) 83.4% (as of 1970)				
<i>Ten leading exports in 1973, in descending order of Value:</i>				
Logs and lumber, copper, sugar, copra, coconut oil, plywood, gold, dessicated coconut, bananas, and pineapple.				

*1966=100

SOURCES OF DATA: N.E.D.A., *Statistical Yearbook 1976*, Manila, Bureau of the Census and Statistics, and Central Bank of the Philippines

NOTE: Since 1970, the foreign exchange rate was P 7.5: \$ 1 (U.S.).

quasi-leisure, with imputed income values, would not eliminate the problem.

The personal income per capita in 1973 was about US \$210, a dramatic increase of 21 per cent over 1972. However, more than half of the increase was due to inflation.

Table 3 presents some of the socio-economic characteristics of the Philippines during the recent years. Among the indicators given are population, labour and employment, income distribution, average income per person, and consumer price index.

DETERMINANTS AND CONSTRAINTS IN MANAGING AGRICULTURAL DEVELOPMENT

Unique Attributes of the Agricultural Development Process

The agricultural development process possesses some unique attributes that make planning and managing profoundly different from other development processes. Among these attributes are the agronomic risks and uncertainties.² The Philippines is hit by 25-30 typhoons within a typical year. Depending on the intensity and timing of a typhoon occurrence, the damage to the rice sector can be tremendous enough to discourage investments by the small farmers in modern farm inputs and techniques. It is of general knowledge that small farmers have 'thin equity' to play with, and it takes only one or two disastrous cropping seasons to wipe out that thin equity. Thus, their risk profile adjusts accordingly.

In non-agricultural industries, development constraints and variables are more amenable to management control. Production of cars in a factory, for example, can be accelerated by working two or three 8-hour shifts in a day. On the other hand, in agricultural processes, there is a limit to the cropping intensity because of the weather uncertainties and the biological cycle of agricultural commodities.

One of the most promising farming intensity techniques to mitigate the risks of monoculture is multiple cropping. Aside from the inherent merits of risk diversification, multiple cropping also increases the utilisation of the family labour resources,

²The agronomic risks and uncertainties and its effects on production and marketing decision in rice farming have been made the subject of a competitive, computerised management game called 'Masagana 99' (copyright by G.M. Collado).

improves the cash flow pattern in a farm enterprise, and compels farming decisions to be market-oriented.

Another set of attributes are the resources and capabilities available to the agricultural sector to fulfil its role of providing the food and fibre needs of the country. An important factor is land. Generally, the Philippines has ample land resources, measured by size, to produce enough food and fibre for its population. The quality and productivity of those lands, however, still leave much to be desired. More than half of the total cultivated area are still unirrigated. There is sufficient evidence to indicate that the relevant land frontiers of the Philippines are becoming scarce. An ILO mission survey showed that it would cost more to open up a new hectare of virgin land for cultivation than irrigate a similar size of cultivated land. Another indication of the limited-frontier situation is that in the 'Palayaning Bayan' project of the government which encourages provincial governors to open up virgin lands for rice farming, only about 20 per cent of the targeted hectareage has been put to cultivation. All these mean that in the future development efforts of the country, hectareage expansion will decrease in importance as a source of output. The country has to rely on production increases arising from higher productivity.

Aside from land, there is the manpower factor. The farm population of the Philippines is probably the most in number but the least in educational attainment. The quality of the labour force is such that the opportunity cost of a farm labourer is probably near zero. Because of their lack of other skills, the labourers from the farm sector have a very limited flexibility in terms of employment. Middle-level training for non-agricultural skills is not yet attractive because of the still limited absorptive capacity of the commercial and industrial sectors in the urban areas.

Another factor to be considered is availability of capital and credit—as the asset and income bases of the farm producers, particularly of the majority who are small (average of 1.8 hectares per farmer), are quite limited. This limits the investment decision options of the producers. One may ask: if the farmers have such thin equity in their business operation, why don't they 'trade on their equity' by borrowing operating capital, and thus increase their financial average? Do they

behave differently from the economic theory of a firm? This is a complex issue the answers to which cannot be adequately provided by the conventional economic or behavioural theory of a firm. First, the farmhousehold entity must be taken as an integral unit of decision-making, and therefore the conventional assumption of a decision locus for production and a separate one for consumption is not quite applicable to a farm household. Farmers do not even keep separate records for their farm enterprise and their house, much less keep decisions on each entity economically 'pure'.

There are two major reasons why small farmers rarely attempt and/or succeed in increasing their financial leverage through credit.³ One is that they are usually ranked by banks at the bottom of the risk ladder. A limited asset base implies inadequate collaterals that could be foreclosed in case a typhoon wipes out the investments. A limited income source means insufficient repayment capacity. Another reason for the generally limited availment of institutional credit by the small Philippine farmers is the risks and uncertainties involved in their operations which systematically encourage conservative attitudes toward risks. There is another side to the coin that says one can trade on a thin equity by increasing the debt-equity ratio. That other side says that one can also go under quickly if the debt-capital ratio is such that one bad year results in foreclosure. Such risk aversion increases due to the emotional attachment of farm families to inherited property such as land.

Technology is the most promising resource, because it is the most adjustable, for agricultural development in the Philippines. It has been found that the Philippines is one of the countries with relatively high residual pay-offs from educational and research efforts.⁴ During the past decade, more output increases in agriculture have been associated with technological improvements than area expansion. In its future efforts towards accelerated agricultural development, the Philippines must rely

³G.M. Collado, *Financing Dimensions of Philippine Agriculture—The Management of Institutional Credit Delivery Programmes for Rice and Sugar Farmers* (unpublished doctoral dissertation, Harvard University, 1975).

⁴Vernon Ruttan and Yujiro Hayami, *Agricultural Development in International Perspective*, John Hopkins Press, Baltimore, 1974.

increasingly on technological generation through and extension. The agricultural universities and research institutes must not only increase the rate of their technological discoveries—they must also shift gears according to the needs and capabilities of the agricultural sector which is paradoxically expanding in population but shrinking in its relative contribution to the total national wealth.

Indeed, one of the characteristics of the agricultural process is that seasonal production is juxtaposed on a constant consumption pattern. The seasonality feature as well as the fixed biological cycles of production make short-term business adjustments difficult. This, in turn, makes any country's agricultural development strategy quite vulnerable to international market and weather conditions. It is a feature of our increasingly interdependent world food system that a long winter frost in Russia almost automatically increases the price of bread in Manila.

The 'Market' as a Mechanism for Agricultural Development

The free-market to mechanism of the economist cannot be relied upon as an effective distributor of benefits. Its accent on competition tends to perpetuate an already inequitable wealth and income distribution.

The benefits of the scientific and technological breakthroughs of the 1960s in the Philippines, summarily called Green Revolution by enthusiastic quarters, tended to be concentrated to the upper half of the Filipino farmers. There are many obvious reasons for this. In any competitive situation, there is a premium in being capable, big, and technologically alert. Almost by definition, the most responsive to free-market signals are those that are already progressive and capable. The first adopters of any new modern rice varieties at the International Rice Research Institute are farmers who: (a) are educated and working at IRRI; (b) read newspapers, watch televisions or listen to radios; and/or (c) run big operations, e.g., corporate farms, and therefore can afford the high capital requirements of the modern rice varieties.

The Philippine agricultural sector has shown its capacity for growth even without much government intervention. The free market advocates argue that more growth would occur espe-

cially without intervention, but this is increasingly irrelevant to the Philippine agricultural situation. High rates of growth will probably come about in Philippine agriculture, given good weather, because of the breakthroughs of the 1960s. But what the country needs today is more equity relative to more growth. It is a sad feature of the development process that a marginal farmer with an unirrigated land is doubly disadvantaged by an irrigation-biased technological research and a credit system that is biased against high-risk rainfed farms.

This implies the need for government intervention towards a more actively managed agricultural development. The next part of this paper will discuss how the government has been organised to formulate policies, plan and implement programmes for agricultural development.

THE ADMINISTRATIVE SYSTEM FOR AGRICULTURAL DEVELOPMENT

In the first half of the century, the government was barely organised for actively managing agricultural development. Agricultural technology and services, while benefiting large corporate interests, hardly reached the large masses of small farmers in the villages. The national budget, as noted by the Bell Mission in 1950, made little provision for the basic occupation of the Filipino people.⁵ Since the fifties, however, the government has shown an increasing concern for agricultural development. More resources have been allocated for agriculture, and greater efforts have been exerted to establish a broader and more effective system of managing agricultural development.

The primary agency of government for agricultural development is the Department of Agriculture.⁶ There are, however, three other departments—Department of Natural Resources, Department of Agrarian Reform, and Department of Local Government and Community Development—which have certain

⁵Report to the President of the U.S. by the Economic Survey Mission to the Philippines, p. 52.

⁶There are currently in the Philippine Government 14 departments which are equivalent to ministries in many other countries. Under the reorganisation plan approved in 1972, each of the department is responsible for a substantive field of administration. [Integrated Reorganisation Plan (as decreed into law by Presidential Decree No. 1, September 21, 1972); Part II, Chapter I, Article 1; par. 1].

functions directly related to agricultural development. In addition, there are several government corporations concerned with such commodities as sugar, tobacco, cotton, and coconut; or charged with agriculture-related activities like grain price stabilisation, fertiliser regulation, irrigation, agricultural marketing and credit.

The agricultural administrative system also includes: (a) the coordinative functions of several interagency bodies, the most important of which is the National Food and Agriculture Council; (b) the agricultural development concerns of central staff agencies, particularly the National Economic and Development Authority; (c) the agricultural development inputs of financial institutions like the Central Bank, Philippine National Bank, Development Bank of the Philippines, and Land Bank; (d) the research, manpower training and/or extension activities of many educational and research institutions, the most prominent of which are the University of the Philippines at Los Banos and the Philippine Council for Agriculture and Resources Research; and (e) the developmental activities of local governments particularly in nationwide food production programmes. This formal administrative system is supplemented by the participation of non-governmental organisations like countryside rural banks, farmers' cooperatives, civic or professional groups, as well as other local, national and international organisations involved in the agricultural development activities in the country.

Department of Agriculture

As the primary administrative entity in agriculture, the Department of Agriculture has the function of managing accelerated agricultural development particularly for the purpose of achieving increased food production and higher productivity, incomes and well-being on the farms.⁷ The Department is headed by a Secretary (Minister), assisted by an Under Secretary and Assistant Secretaries.⁸

Departmental Staff Units : Under the Office of the Secretary are three staff units with department-wide functions : (a) Plann-

⁷Integrated Reorganisation Plan, Part VIII, Chap. I, Art. 1, par. 1.

⁸As of July 1976, the position of Under Secretary is vacant, there are, however, three Assistant Secretaries at present.

ing Service which provides staff assistance in department-wide planning, programming and project development; (b) Financial and Management Service which renders staff assistance in budgeting, financial matters, and management improvement; (c) Administrative Service which performs staff functions relating to personnel, legal assistance, information records, disbursements and other administrative matters. Also under the Office of the Secretary is a Computer Service Centre which provides data banking and processing services to the Department and the bureaus and agencies under or attached to it. There is likewise an Agrarian Reform Unit which advises and assists the Secretary in orienting agricultural development policies and programmes to the attainment of agrarian reform objectives, in coordination with the Department of Agrarian Reform.

Bureaus : The Department of Agriculture has four line bureaus and one staff bureau, each headed by a director. The line bureaus are : (a) Bureau of Plant Industry which is responsible for the development, production and protection of agricultural crops; (b) Bureau of Animal Industry which is concerned with the development of the animal industry, particularly the improvement of livestock as well as the control and eradication of animal diseases; (c) Bureau of Agricultural Extension which disseminates agricultural information, conducts field demonstrations and renders other extension services aimed at helping farmers attain higher productivity and a better quality of life; and (d) Bureau of Soils which is involved in the assessment, development and conservation of soil resources of the country. The Bureau of Agricultural Economics, the lone staff bureau of the Department, conducts economic and marketing research and is responsible for the collection, compilation and official release of agricultural statistics.

Regional Offices : Each of the bureaus maintains offices in the 13 administrative regions into which the country is divided. The regional office is headed by a director, who under the recent reorganisation plan, has been delegated more authority to implement policies and programmes in the field. This policy of administrative decentralisation has been

similarly extended to field officials at the provincial or district levels.

The Bureau of Agricultural Economics does not have regional offices but maintains such field offices as may be necessary to perform its economic research and statistical work.

Administrative Bodies : In addition to its regular bureaus, staff units and field services, the Department has administrative supervision over a number of commissions, councils or committees. These include: the Green Revolution Expanded Programme Action Committee composed of key officials from several agencies, with the function of encouraging the cultivation of vegetables and fruits in idle or undeveloped residential and commercial lots, and the increased production of livestock, poultry and fishery products in cooperation with local governments as well as civic, religious and professional associations,⁹ (b) National Meat Inspection Commission which has the task of formulating and implementing a meat hygiene programme relative to the production, transport, and marketing of livestock and animal products;¹⁰ and (c) Philippine Agricultural Training Council which was created to formulate and implement an effective programme for agricultural manpower training and utilisation, especially for 4-H clubs and similar youth organisations.¹¹

An interagency body under the administrative supervision of the Department that deserves singular mention is the National Food and Agriculture Council. This Council coordinates the activities of all government instrumentalities which relate to the production, procurement, processing, marketing and distribution of rice and corn, fruit and vegetables, fish, poultry and meat products, and other prime commodities.¹² It has led effectively in the planning and implementation of nationwide programmes for food self-sufficiency like Masagana 99.

Agricultural Corporations : Several government corporations, each governed by a board of directors, are attached to the Department of Agriculture for policy and programme coor-

⁹Executive Order No. 418, July 26, 1973, and Executive Order No. 830, November 27, 1975.

¹⁰Presidential Decree No. 7, October 1, 1972.

¹¹Executive Order No. 307, March 23, 1971.

¹²Executive Order No. 183, May 6, 1969.

dination. The National Grains Authority is charged with the responsibility of : (a) maintaining and managing buffer stocks sufficient to stabilise rice, corn and other grains, and (b) developing facilities for grain processing, storage, transport and marketing.¹³ It was subsequently given the sole authority to determine and import the annual wheat grain requirements of the country.¹⁴

Two agricultural corporations are concerned with the development of the tobacco industry. The Philippine Tobacco Administration seeks to improve production, financing and marketing of cigar leaf tobacco. It maintains demonstration farms to provide technical assistance to tobacco growers, engages in supervised farm credit and direct buying operations for price stabilisation, and conducts market research, trade promotion, and tobacco inspection.¹⁵ This corporation, which was attached to the Department of Agriculture under the government-wide reorganisation plan in 1972, was recently transferred to the Office of the President. The other corporation is the Philippine Virginia Tobacco Administration which was created to accelerate the development of the virginia tobacco industry. Endowed with functions similar to the other tobacco enterprise, the PVTa supervises and controls all operations relative to the processing, warehousing and trading of virginia tobacco; it fixes the floor price of each grade of this locally grown, flue-cured product, conducts research, and assists in the organisation of tobacco farmers' cooperatives.¹⁶ These two corporations coordinate with each other and with other government agencies and the industry through two interagency board of which the general managers of both state firms are members.

The government entity concerned with sugar, a major export crop, is the Philippine Sugar Commission. Under a Presidential Decree promulgated in 1974, the Philippine Sugar Institute and the Sugar Quota Administration were both abolished and their

¹³Presidential Decree No. 4, September 26, 1972.

¹⁴Presidential Decree No. 726, June 5, 1975.

¹⁵Republic Act 1135, June 16, 1954, as amended by Presidential Decree No. 288, September 7, 1973

¹⁶Republic Act No. 2265, June 1959, as amended.

functions absorbed by the new Commission.¹⁷ To stabilise sugar price and maintain a balance between production, local consumption and export, the Commission shall determine the floor ceiling price of sugar and act as the single buying and selling agency of sugar on the *quedan-permit* level. It shall organise cooperatives of sugar planters and conduct agricultural and industrial research work for the sugar industry.

For the accelerated development of the coconut industry, the Philippine Coconut Authority was created. The Authority has been charged with the formulation and implementation of a nationwide coconut replanting programme as well as a price stabilisation scheme for coconut products. To these ends, it shall finance the establishment of a hybrid coconut seednut farm and the maintenance of extension services, model plantations and other related activities.¹⁸ The Authority is complemented by the Coconut Investment Company which provides, through an investment fund, medium and long-term financing for capital investment in the coconut industry.¹⁹

A relatively new agricultural enterprise in the Philippine Cotton Corporation which seeks to foster growing of cotton on a commercial scale, including the conduct of appropriate researches and the purchases and marketing of products under a national cotton-growing programme.²⁰

Other Departments and Agencies Serving Agriculture

Several public agencies serving Agricultural sector are found outside the Department of Agriculture. Three of these agencies are under the Department of Natural Resources, namely: (a) Bureau of Forest Development which is responsible for the proper classification, conservation, reforestation and management of public forests and forest reserves, as well as the preservation and development of national parks and

¹⁷Presidential Decree No. 388, February 2, 1974. Presidential Decree No. 830, November 27, 1975, transfers the Philippine Sugar Commission from the Office of the President and placed "under the administrative supervision" of the Department of Agriculture. The Commission, however has not yet been fully activated; the old staff in the Philippine Sugar Institute has continued to operate as of July, 1976.

¹⁸Presidential Decree No. 232, June 30, 1973, as amended.

¹⁹Republic Act No. 6260, June 17, 1971, as amended.

²⁰Presidential Decree No. 350, December 22, 1973.

wildlife; (b) the Bureau of Fisheries and Aquatic Resources which seeks to promote and development of fishery and marine resources through research and extension services, procurement, distribution and stocking of suitable fish seeds, and assistance in the marketing of fish; and (c) the Bureau of Lands which is responsible for the conduct of land surveys and management and disposition of lands so essential for increased production and agrarian reform.

Another major agency with functions closely related to agricultural development is the Department of Agrarian Reform. With agrarian reform avowed as one of the cornerstones of Philippine society, the Department plays a vital role of implementing the national programme to establish owner-cultivatorship and the economic size farm as the bases of Philippine agriculture.²¹ The avowed national policy is not only increased agricultural production and food self-sufficiency but also more equitable distribution of wealth and income.

At present, all privately-owned rice and corn lands of more than seven hectares are being expropriated by the Department for distribution to landless tenants. Complementing this is a land resettlement and public land distribution programme. Aside from its staff units, the Department has four bureaus: Bureau of Farm Management, Bureau of Land Acquisition, Distribution and Development, Bureau of Resettlement, and Bureau of Agrarian Legal Assistance. Attached to the Department is the Agricultural Credit Administration, a corporate entity which has the main task of extending credit to farmer-beneficiaries of agrarian reform.

Agricultural development function are also found in a third major agency—the Department of Local Government and Community Development. It is given the responsibility of establishing an integrated scheme for the promotion, organisation, development and evaluation of all cooperatives.²² Likewise, through its Bureau of Community Development, the Department has launched a four-year rural development programme to help the farmers and other people in the rural areas through education and training as well as the stimulation of

²¹Republic Act 6389, September 10, 1971, as amended.

²²Integrated Reorganisation Plan, Part XVII, Chap I, Art. 6, par. 3.

community planning and self-help projects.²³

To maximize the utilisation of all installed fertiliser manufacturing capacity and to nationalise fertiliser importation, the Fertiliser Industry Authority, with the Secretary of Agriculture as Chairman, was created in 1973. It controls fertiliser prices and regulates fertiliser imports and exports; it regulates all aspects of domestic fertiliser production. Intended to meet an emergency situation, it shall cease to exist five years from creation unless sooner abolished by the President.²⁴

In addition to these agencies, there are public enterprises with functions related to agricultural development but are attached to non-agricultural departments. One is the National Irrigation Administration which explores all possible water resources for irrigation purposes and is responsible for the design and construction of the national irrigation system.²⁵ It is attached to the Department of Public Works and Communication.

Another corporation is the Food Terminal, Incorporated, which is a subsidiary of the Development Bank of the Philippines. It provides terminal facilities for the efficient and economical marketing of agricultural products. Initially operating in the Metropolitan Manila area, it has been expanding operations by the establishment of many trading posts throughout the country.

Agricultural development is also one of the major thrusts of several area development authorities which have been recently activated for the comprehensive development of selected regions of the country. One of these is the Bicol River Basin Development Authority.

Process of Development Planning and Implementation

Before the government reorganisation of 1972, the planning and implementation of agricultural development suffered from some basic weaknesses inherent to the national planning process as a whole. These weaknesses included: (a) the proliferation of

²³Rural Development Division, Bureau of Community Development, DLGCD, Four-Year Rural Development Programme 1975-78 (Undated), pp 3-4.

²⁴Presidential Decree No. 135, February 22, 1973.

²⁵Republic Act No. 3501, March 17, 1964.

economic planning bodies and *ad hoc* councils which led to the dispersal of planning functions and the lack of effective coordination among the planners; (b) the weak link between development planning and government budgeting, between plan formulation and programme execution; and (c) lack of structural framework and staff capability for sectoral and regional planning.²⁶

It was with these weaknesses in mind that the Integrated Reorganisation Plan, which was approved by decree in 1972, sought to improve the processes of development planning at all levels of the government. More specifically, the Plan aimed at institutionalising:

“a broad organisational framework for the development and formulation of integrated plans and goals including related activities towards the development of policies and guidelines; the evaluation and review of specific development programmes and projects to ensure their consistency with the overall development plan; and the coordination and integration of the implementation of approved economic programmes and projects.”²⁷

Agricultural development planning and implementation is now carried out within this broad organisational framework. At the apex is the National Economic and Development Authority (NEDA) with the President of the Philippines as chairman. Membership in the NEDA Board includes several cabinet members including the Secretary of Agriculture. The NEDA formulates, in consultation with the government departments and the private sector, long-range and annual socio-economic development plans and programmes.

Initially, the NEDA Board establishes overall objectives and goals of national development, on the basis of which the NEDA technical staff prepares planning guidelines. The Budget Commission, taking note of these planning guidelines, prepares

²⁶Sixto K. Roxas, “Organising the Government for Economic Development Administration,” Terminal Report to President Diosdado D. Macapagal, February 17, 1964; Gerardo P. Sicat, “NEDA and Regional Development Planning,” NEDA Development Digest, February 15, 1964.

²⁷Integrated Reorganisation Plan, Vol. II (Summary Justifications and Supporting Tables), p 107.

and issues budget circulars for the preparation of agency budgets. These guidelines and circulars are taken into account by the departments in the preparation of departmental plans and programmes, including budgetary estimates.

The NEDA planning guidelines are also considered by the Regional Development Councils in the formulation of their respective regional development plans ²⁸

The NEDA technical staff then seeks to integrate the sectoral plans and regional plans into the National Development Plan. The Plan is then submitted to the NEDA Board for review. At the same time, the Plan is considered by the Development Budget Committee, composed of the Budget Commissioner as chairman and the Secretary of Finance, NEDA Director General and the Governor of the Central Bank, which then prepares revenue estimates and establishes the level of government expenditure. Credit and foreign exchange requirements of national development are determined and coordinated by the Investment Coordination Committee with the NEDA Director General as chairman, the chairman of the Board of Investments as vice-chairman, and the heads of government financial institutions as members. The National Development Plan as reviewed by NEDA, including the budgetary and investment requirements, is then presented to the President for approval.

Based on the approved Plan, the NEDA technical staff translates the sectoral and regional plans into programmes and projects, determines programme priorities, and issues project development guidelines. At the same time, the Budget Commission prepares the National Budget after consultations with the departments and agencies.

Working within the approved budget, programme priorities and project development guidelines, a department or agency like the Department of Agriculture can then prepare project proposals which are evaluated and approved by the NEDA. After a project proposed is thus approved, the department prepares work programmes which are evaluated by the Budget Commission before funds for the project are released by the

²⁸This Council is composed of provincial governors and city mayors within the region, together with a NEDA representative, the general managers of regional authorities, and the regional directors of national departments concerned with socio-economic development.

Office of the President. The department, upon receipt of the advice of allotment from the Budget Commission, then implements the projects. These are monitored through project status reports. In the meantime, the NEDA technical staff identifies problem areas in project implementation and reviews performance, on the basis of which plans are further updated and refined.

Dynamics of Agricultural Development Planning and Implementation

The actual functioning of this administrative set-up has demonstrated both strengths as well as weaknesses. This may be seen more specifically by focusing on the dynamics of planning and implementing agricultural development programmes.

What are some of its strengths? First, both the Secretary of Agriculture and Secretary of Natural Resources are member of the NEDA Board. Thus, the concerns and perspectives of agricultural development are adequately articulated in the highest authority in planning and development formulation.

Secondly, the Agricultural Staff of NEDA has considerably increased its technical competence and influence such that agricultural development is more adequately considered in the aggregation of sectoral plan by the NEDA staff. Moreover, said staff has been quite effective in establishing linkages with and in extending technical assistance to the agricultural agencies particularly in project development. In fact, an Assistant Director General of NEDA, a young but experienced and competent agricultural economist, has often provided technical advice and assistance to the Secretary of Agriculture.

Thirdly, regional directors of the Department of Agriculture and other agricultural agencies constitute a large part of the membership in the Regional Development Councils, assuring ample participation in the formulation of development plans and priorities in the region.

Fourthly, the present set-up has led to better integration between planning and budgeting, between sectoral and regional planning, as well as between planning and programme implementation. With the full backing of the President himself, the budget has been effectively utilised in ensuring that programmes and

projects in the various agencies conform to the agricultural development plan.

On the other hand, certain weakness may be pointed out. There is, first of all, a relative lack of trained and competent planners especially at the departmental, bureau and regional levels. Posts in the Planning Service of the Department of Agriculture, for instance, are mainly occupied by bureaucrats who have not really specialised in development planning. The same can be said of the planning and management staff in the bureaus and regional offices. Thus, in the Department of Agriculture, the Secretary has directly assumed much of development planning in his department. To this end, the Secretary—a management man with graduate training from Cornell and Harvard universities—has recruited a number of part-time planning and management consultants from the Asian Institute of Management, and has called on many Ph.Ds. from the University of the Philippines at Los Banos to assist him. The training of more development planners is urgently needed to make the present planning organisation more effective at all levels of government.²⁹

Secondly, there is need for more effective coordination of the several departments, corporations and agencies involved in agricultural development. Interdepartmental collaboration, despite the integrated planning structure and coordinative mechanisms at the operational level, still needs enhancement. For instance, while agricultural corporations are attached to the Department of Agriculture for policy and programme coordination, some of them practically plan and implement their programmes without consultation with or review by the Department. Also, the different extension services of the four departments concerned with agricultural development have yet to benefit from a kind of coordination that will achieve mutual reinforcement and more integrated action in the service of the farmers. The need for more integrated extension services is especially urgent because there is a limit to funds that can be allocated for this purpose. And even if funds were available,

²⁹To help meet this need, the School of Economics, University of the Philippines, initially in cooperation with the University of Wisconsin, has instituted a one-year programme in development economics for government planners, and has produced more than 400 graduates.

there are not enough trained men who can be recruited. Thus, there is an unnecessary competition among the departments for relatively scarce manpower and funds. Consequently, the development and performance of extension workers in the country have been uneven and not as effective as it could be.

A third weakness arises from the competition for power and influence which naturally follows the creation of a superbody for economic planning and programme implementation like NEDA. There is considerable feeling among some officials and personnel in the line departments and agencies that the NEDA staff has tended to step into their jurisdictional areas. Contrariwise, a number of institutions have undertaken projects or activities which have been considered by some as impinging on the planning functions of the NEDA staff. One case cited is the Development Academy of the Philippines which, through its research, training and consultancy services, has undertaken broad programmes in human settlements, human resource development, regional development, farm systems, information system and others. In a published brochure, it was stated that the Academy seeks "to provide a framework for the planning of the Philippine future and establish DAP as a major resource for planning in Asia."³⁰

These perceived jurisdictional questions or conflicts, whether real or imagined, indicate the continuing need for more effective integration and coordination of development planning efforts, not only with the establishment of well-conceived organisational structures but the cultivation of attitudes and relationship for better cooperation and teamwork among the people engaged in the complex and vital task of national development.

GOVERNMENT POLICIES AND STRATEGIES FOR AGRICULTURAL DEVELOPMENT

With the foregoing description of the administrative system, it may be useful to identify and assess the outputs from that system, *i.e.*, the government policies and strategies to promote

³⁰G.V. Iglesias, *Administrative Reforms and Innovations: An Assessment of Development Planning and Implementation Experience in the Philippines*, paper prepared for the Conference on the Political Economy of Development, Manila, December 17-18, 1974, pp. 13-14, 19-20.

national development in general and agricultural development in particular.

*The Goals of National Development*⁸¹

The broad development goals of the Philippines are six, namely:

- (a) Maximum utilisation of the labour force;
- (b) Maximum economic growth feasible;
- (c) More equitable distribution of income and wealth;
- (d) Regional development and industrialisation;
- (e) Promotion of social development; and
- (f) Maintenance of an acceptable level of price and balance of payments stability.

The agricultural development approach essentially calls for raising rural incomes and achieving self-sufficiency in food. These are hoped to be attained through food production and land reform programmes, complemented by cooperatives and infrastructure, specifically irrigation and feeder roads.

A simultaneous approach to industrial development includes thrusts towards the promotion of employment opportunities through labour-intensive methods of production, expansion of manufactured exports, dispersal of industrial sites to the regions, and strengthening of industrial linkages.

In the pursuit of the above-mentioned objectives and approaches to national development, the government has laid down the following basic policies and guidelines:

1. Private enterprise shall remain the medium of economic progress.
2. Monetary, credit and fiscal policies shall be utilised to promote economic growth and stability.
3. Greater labour utilisation shall be encouraged through the use of such instruments as labour laws and incentives.
4. Industries shall be encouraged through appropriate investment incentives; they will be continuously rationalised based on resource availability, market size and regional location.
5. Exports shall be expanded and diversified.

⁸¹National Economic and Development Authority. *Four-Year Development Plan, FY 1974-1977*, Manila, NEDA, 1974.

6. Agricultural development shall be emphasised in harmony with industrial development.
7. Foreign investments shall be encouraged in priority investment areas by liberalising the foreign investments law (e.g., on profit/dividend repatriation), but without prejudice to national sovereignty.
8. A realistic foreign exchange rate shall be maintained to promote exports and monetary stability.
9. The administrative machinery for development planning and implementation shall be continuously streamlined.
10. The educational system shall be continuously improved to develop the necessary manpower resource for development efforts.
11. Price control will cover only the basic commodities. It is not intended to become an integral part of the economic system, only as a temporary measure to discourage speculation and monopoly profits.
12. Infrastructure development is to be given high priority.
13. International cooperation, compatible with national interest, will be promoted especially with Asian neighbours.
14. Foreign economic policy will be guided by diversification of import sources and export markets.

Agriculture in the National Development Priorities

Agriculture provides the backbone of the Philippine economy. It contributes one-third of the gross domestic product, two-thirds of the total export income, and employs one-half of the labour force. Given these parameters, it is interesting to look at the magnitudes of what the agricultural sector receives from the national budget to return for its contributions.

The government outlays for sectoral development doubled during the 1971-74 period, from P4.413 to P8.6 B. During that time, total economic development expenditures increased its share of the total budgetary outlays from 29 per cent to 40 per cent. Among the economic development projects, those in agriculture and natural resources obtained about one-fourth of the outlays, second only to the transportation and communication sectors (Table 4).

TABLE 4
GOVERNMENT OUTLAYS FOR SECTORAL DEVELOPMENT, 1971-74
(in million pesos at current prices)

Expenditure Classification	1971 ¹		1972 ¹		1973 ²		1974 ²	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
A. Current Expenditure								
1. Economic Development	688	15.5	824	14.7	1,050	13.1	1,711	19.9
Agricultural and Natural Resources	200	4.5	254	4.5	425	5.3	457	5.3
Commerce and Industry	58	1.3	73	1.3	73	0.9	475	5.5
Transportation and Communication	335	7.6	402	7.2	400	5.0	588	6.9
Other Economic Development	95	2.1	95	1.7	152	1.9	191	2.2
2. Social Development	1,485	33.5	1,695	30.3	1,918	24.0	2,240	26.0
3. Debt Service	357	8.1	326	5.9	922	11.6	522	6.1
4. National Defence	733	16.6	857	15.3	1,172	14.7	1,282	14.9
5. General Government and others	501	11.3	718	12.9	841	10.5	838	9.7
Total Current Expenditures	3,765	85.0	4,420	79.1	5,903	73.9	6,593	76.6

B. Capital Expenditures										
1. Economic Development	589	13.3	1,070	19.2	1,879	23.5	1,703	19.8		
Agriculture and Natural Resources	101	2.3	285	5.1	316	3.9	522	6.1		
Commerce and Industry	62	1.4	283	5.1	501	6.3	69	0.8		
Transportation and Communication	306	6.9	394	7.1	757	9.5	855	9.9		
Other Economic Development	119	2.7	108	1.9	305	3.8	257	3.0		
2. Social Development	54	1.2	68	1.2	120	1.5	202	2.3		
3. National Defence	14	0.3	23	0.4	81	1.0	91	1.1		
4. General Government	7	0.2	7	0.1	7	0.1	17	0.2		
Total Capital Expenditure	664	15.0	1,168	20.9	2,087	26.1	2,013	23.4		
Total Expenditures	4,429	100.0	5,588	100.0	7,990	100.0	8,606	100.0		

¹Actual expenditures²Estimate

SOURCE: Four-Year Development Plan, FY 1974-77, pp. 62-65.

Social development (e.g. social welfare, education, etc.) has been getting the biggest slice of the operating budget, while economic development and national defence have been allocated almost equal amounts. In regard to the capital outlays, economic development infrastructures have been getting the biggest share.

The planned budgetary outlays for 1975-77 approximate the proportionate shares of the sectors in the actual expenditures of 1971-74. Social development will still be the single biggest recipient of operating funds, but this time, national defence will overtake economic development in terms of percentage shares. Economic development and general government will receive about the same allocations (Table 5.)

Of the capital outlays, however, economic development will get the biggest share in the 1975-77 period. About three-fourths of the total government budget are planned to be spent on operating activities. The total planned expenditures will reach P10.9 B in 1977, or about 15 per cent more than the anticipated revenue of P9.6 B for that year.

Agriculture and natural resources will get a little more than 10 per cent of the total planned government expenditures in 1975-77, or about P10 B. This amount will be almost equally divided into operating and capital expenditures.

Major Agricultural Development Programmes

The agricultural development programmes of the government aim at the following:

1. Acceleration of land transfer and distribution
2. Self-sufficiency in food and food products
3. Conservation and development of forest resources
4. Expansion of exports and import substitutes

The strategies which operationalise the above-mentioned four objectives may be grouped into the following major programmes:

Agrarian Reform: Immediately after the declaration of martial law in 1972, the President decreed that all rice and corn areas are land reform areas, and that the tenants of those lands are deemed owners of the land they till as of then. Indeed, the President has staked his New Society programme on the success of the agrarian reform efforts.

TABLE 5
PROJECTIONS OF NATIONAL EXPENDITURES, 1975-77
(in million pesos at current prices)

Expenditure Classification	1975		1976		1977	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Current Expenditures						
1. Economic Development	1,117	12.6	1,215	12.2	1,301	12.0
Agriculture and Natural Resources	471	5.3	512	5.2	549	5.1
Commerce and Industry	112	1.3	122	1.2	130	1.2
Transportation and Communication	411	4.6	447	4.5	478	4.4
Other Economic Development	123	1.4	134	1.3	144	1.3
2. Social Development	2,334	26.3	2,542	25.7	2,724	25.0
3. Debt Service	551	6.2	577	5.8	585	5.4
4. National Defence	1,390	15.7	1,515	15.3	1,625	14.9

(Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
5. General Government and Others	1,104	12.4	1,226	12.4	1,349	12.4
Total Current Expenditures	6,496	73.2	7,075	71.4	7,584	69.7
B. Capital Expenditures						
1. Economic Development	1,872	21.1	2,142	21.6	2,364	21.7
Agriculture and Natural Resources	462	5.2	530	5.4	585	5.4
Commerce and Industry	134	1.5	153	1.5	169	1.5
Transportation and Communication	688	7.8	787	7.9	868	8.0
Other Economic Development	588	6.6	672	6.8	742	6.8
2. Social Development	264	3.0	372	3.8	467	4.3
3. National Defence	169	1.9	230	2.3	302	2.8
4. General Government and Others	73	0.8	86	0.9	167	1.5
Total Capital Expenditures	2,378	26.8	2,830	28.6	3,300	30.3
Total Expenditures	8,874	100.0	9,905	100.0	10,884	100.0

SOURCE: *Four-Year Development Plan, FY 1974-77*, p. 65

Table 6 shows the distribution of tenanted rice and corn farms by size in the Philippines. Although the issue of what constitutes a viable economic-sized family farm has not been settled until the present time, the government has decided that tenanted rice and corn lands not exceeding seven hectares may remain under leasehold.

TABLE 6
AREA OF TENANTED RICE AND CORN FARMS IN THE
PHILIPPINES

	<i>Total Area (Has)</i>	<i>Per cent</i>
below 7 has	316,027	23.53
7—11.99 has	153,804	11.45
12—23.99 has	189,722	14.12
24—49.99 has	134,248	10.00
50—99.99 has	139,030	10.35
100 has and above	410,836	30.55
TOTAL	1,343,217	100.00

SOURCE: T.G. Flores and F.A. Clemente, "Socio-Economic Profile of Tenants & Landlords/Landowners in the Philippines (mimeo), November 1975, p. 48.

The major agrarian reform efforts of the Philippines date back to 1964 when the land reform law was signed. The implementation of the law, however, has always been ambivalent mainly because of the pervasive political power and influence of the landowner, including many members of Congress, under the old regime. The ambivalence and conflict of interest somehow manifested themselves in the long leasehold transition period since 1964. This leads one to hypothesise that for agrarian reform to be effective, it should be implemented so swiftly that the landlords would not have sufficient time to organise and devise ways to circumvent the reform efforts.

As of December, 1975, only about 210,000 farmers have received their land transfer certificates, covering a total area of 367,000 hectares.³²

³²Department of Agrarian Reform, Quezon City, Philippines.

Major Food Production Programmes

*Masagana 99 and Masaganang Maisan*³³: The staple crop of Philippines, rice is produced in about 3.2 million hectares of 35 per cent of the total cropped area.

This massive rice production programme, which is now in its third year, involves 58 provinces covering a target area of 820,000 irrigated hectares and some 240,000 hectares of rainfed areas or a total of 1,060,000 hectares. This total hectareage will be planted by high-yielding, short-maturing varieties of good to excellent eating-quality.

The programme is being implemented through an aggressive extension service, utilising a package of innovative technology which is fully supported by a massive supervised credit scheme. Farmer-cooperators are granted production loans without collateral agreements primarily on the basis of a farm plan and budget which the farmer prepares with the assistance of a government production technician. The National Grains Authority stands ready to buy the produce of all farmer-cooperators at the support price announced before the start of the planting season.

Masaganang Maisan is the feedgrain production programme which is implemented in almost the same manner as the Masagana 99 programme and has been discussed in some preceding papers.

The feedgrains programme is meant not only to meet the food requirements of about 20 per cent of the Filipino population but also to gradually provide the greatly expanding requirements of the livestock and poultry industries.

Livestock Development : The livestock development programme seeks to achieve the following major objectives:

1. to meet the effective demand for meat and eggs;
2. to bridge the nutritional gap in meat, milk and eggs; and
3. to export the surplus output, if any.

Its major components are the production and marketing of pork, poultry, beef, eggs and milk. Major emphasis is being

³³Masagana literally means bountiful, Maisan means corn field.

given initially to the production of fast-multiplying animals like poultry and swine. The programme emphasis will gradually shift to cattle and carabaos which do not rely heavily on concentrated feeds.

Measures being undertaken to insure the attainment of the production objectives include the following:

- (a) intensification of extension, artificial insemination and veterinary services;
- (b) formation of marketing cooperatives;
- (c) promotion of an efficient marketing services;
- (d) expanded livestock research;
- (e) forage development;
- (f) large cattle operations;
- (g) feedlot operations;
- (h) integration of cattle-crop operations; and
- (i) the grant of liberal financing.

Expanded Fish Production Programme : The fish production programme seeks to achieve the following objectives:

1. to accelerate the pace of fish production in order to attain self-sufficiency by 1976; and
2. to save and earn dollars.

The major components of the programme involve fishpond development, commercial fishing and municipal fishing. Fishpond development will be promoted through fingerling production and dispersal, research, extension services and the leasing of fishponds. Commercial fishing will be encouraged through the conduct of surveys of traditional and non-traditional fishing grounds to promote conservation and extend fishing operations to deeper water over 50 fathoms deep and the construction of fishing ports will be expanded through the motorisation and improvement of fishing crafts and the provision of credit assistance by the rural banking system and ACA.

The major production strategy involves the improvement of fishpond productivity per hectare through the provision of technical and financial assistance so that better fishpond management practices will be followed, including the use of fertiliser to induce the production of algae, plankton, and 'lablab' which serve as natural feed for 'bangos'. There is an ongoing programme to train deep-sea fishing crews, technicians

and master-fishermen so that the fish catch per vessel may be increased.

The Bureau of Fisheries and Aquatic Resources (BFAR) is also promoting the expansion of fishpond areas and increasing the number of fishing vessels. A World Bank loan for fisheries development is assisting in the attainment of this objective.

More efficient fish utilisation is also being promoted to eliminate wastage in processing, marketing and distribution. The construction of the Navotas Fishing Port in Metro Manila, pilot processing plants, and iceplants and cold storage facilities by the BFAR are some of the measures to attain this objective.

The National Food and Agriculture Council (NFAC) has served as the core or lead organisation in the implementation of the massive food production programme of the Philippine Government. NFAC is really an expanded version of the former Rice and Corn Production Coordinating Council (RCPCC) which was revitalized in the mid-sixties as the instrument through which new high-yielding varieties could be distributed for trial and eventual widespread adoption by the formerly tradition-bound Filipino farmers.

The basic goal of the NFAC was initially to attain self-sufficiency in rice at the earliest possible time. Hence, considerable resources of the government were mobilised to support the Masagana 99 programme which was formally launched by the President in May 1973.

What are the basic strategies of Masagana 99 programme? Are they really new or are they merely the application of old concepts under a well-organised machinery of government? There is no single answer to these questions.

The administrative part of strategy has been discussed in some preceding papers.

Besides, the following are some important features of Masagana 99.

1. The widespread use of the high-yielding rice varieties is promoted. There is a continuous change of varieties as new varieties were developed by IRRI, UPLB and BPI. The new varieties, such as IR 20, IR 28, IR 30, C-463 (G), BPI-76 (I) and IR 1561, have taken the place of the earlier HYVs, such as IR-8, IR-5. The newer varieties have better eating qualities and are more resistant to a wider range of pests and diseases.

The Secretary of Agriculture calls the widespread use of HYVs as a massive transfer of technology to the Philippine countryside.

2 Considerable financial resources to support the supervised credit programme are mobilised. The Philippine National Bank has been directed to serve the credit requirement of at least half of all the rice farmers participating under the programme, while the rural banking system and the Agricultural Credit Administration have also greatly expended their lending operations. Almost one billion pesos have been lent to finance the credit needs of rice farmers. The repayment record of Phases I, II and III have been very encouraging, averaging close to 80 per cent. There have been problems in the collection of matured loans in areas where typhoons, droughts or floods have destroyed the crops. Many of these loans have been restructured. The supervised credit programme has been greatly supported by government production technicians who have helped in the preparation of the farm plan and budget needed for the processing of loans.

3. The interest of the people, particularly our rice farmers in using high-yielding varieties and in availing of credit assistance, is aroused and maintained through a massive public information programme with the radio as a potent medium. Printed literature on cultural practices and loaning procedures are made available in the major dialects of the country.

On top of all these, the President supported the programme to the hilt. In fact, he indicated upon the launching of Masagana 99 that the success of the programme was matter of national survival. No effort has been spared to insure the success of the programme. The price support level at which the National Grains Authority must procure palay has been successively increased from P35 per cavan of 50 kilos to P40, to P45, then to P60. It is presently pegged at P60 per cavan in order to encourage the rice farmers to use yield-increasing inputs such as HYVs and fertiliser. The Secretary of Agriculture has staked his leadership on Masagana 99 and he has given his personal attention to programme implementation as no department secretary has ever done before.

In summary, the basic implementation strategy has included the concentration of government support in irrigated areas and

a few selected unirrigated areas; the mobilisation of local government support, especially from the provincial governors; the widespread use of high-yielding varieties; the mobilisation of financial resources to support the credit needs of the programme through a supervised credit scheme; the heavy use of public information through the radio and other mass media to arouse support and participation; and the strong and continuous support of the Chief Executive.

The above food production programme have also been accompanied by institutional mechanisms and facilitative policies for support. These include the following:

Cooperative Development Programme

The Philippine has never been famous for the viability of its farm cooperatives. In the 1950s, thousands of marketing cooperatives (FACOMAs) were organised to undertake the marketing activities of rice and corn farmers. However, those cooperative organisations gradually died a natural death mainly due to mismanagement and lack of appreciation of cooperative principles.

The Philippines is backtracking in its cooperative development efforts. Pre-cooperative organisations (*Samahang Nayan*) are being organised as a testing and educational or introductory experience prior to full-fledged cooperative membership. As of April 1976, a total of 18,141 *Samahang Nayan*'s have been organised by 831,342 farmer-members. Altogether, their cash savings and other resources amounted to P42.6 million.

Corporate Farming Under General Order 47

The government requires corporations with 500 or more employees to produce or import the rice and corn consumption requirements of their staff. This had induced the big corporations to open up marginal lands for commercial farming with modern irrigation and mechanisation facilities.

Agricultural Credit

The government has directed the rural banks, its own Philippine National Bank and its Agricultural Credit Administration to liberalise their collateral requirements and engage

in supervised credit. This policy has immediately infused about P600 million loans into the rice farms in 1973, compared with P400 million before the Masagana programmes.

Another reform in the agricultural credit system is the requirement for commercial banks to devote at least 25 per cent of their loanable funds to agriculture. In 1972-73, only 9 per cent of the total loan portfolio of the institutional credit system went to agriculture. Through this directive (Presidential Decree No. 717), the government wants to correct the apparent capital rationing to agricultural ventures by the financial institutions of the Philippines.

CONCLUDING NOTE

During the last two and half decades, three phases of agricultural development management could be discerned by an analyst of the Philippine scene.

The first phase occurred in the 1950s during which the Philippine government, for the first time, created some institutions with specific missions for agricultural development. Thus, the Bureau of Agricultural Extension was established to institutionalise the technology transfer from the researchers to the farmers. The Agricultural Credit and Cooperatives Financing Administration was formed to extend credit and encourage the formation of marketing cooperatives among the small farmers. The Presidential Assistant on Community Development was appointed to conceptualise and operationalise the central administration's concern for improving the quality of life in rural communities. There were other agencies created but the main point is that during the 1950s, the government addressed itself to specific agricultural development problems by creating institutions which operationalised the government's approaches to the identified areas of concern. This alone could be considered an accomplishment. This first phase, however, had two main shortcomings. Firstly, the government's efforts did not result in significant improvements in the production and incomes of the small farmers because the appropriate modern technologies were simply not available. Secondly, there was no effective integration of the activities of the newly-created agencies towards a systematic approach to agricultural development.

The second phase during the 1960s was a significant improvement over the first. Its main stimulus was the genetic breakthrough in rice and corn varieties in the second half of the sixties. The technological breakthroughs became the rallying point in managing the agricultural sector. A Rice and Corn Production Coordinating Council (RCPCC) was created under the Office of the President to coordinate the transfer and utilisation of the new technologies to the farms. The immediate result during the first year was a surplus in rice. In a traditionally rice importing country, such a success was certainly welcome. Unfortunately, the success was shortlived mainly because the approach was segmental. As its name implies, the RCPCC emphasised only the farm and production technology aspects of the development process. The new familiar second-generation problems were not given the necessary magnitude of attention by the government and the private sector.

Another distinguishing innovation during the 1960s was the enactment of the land reform law. But as mentioned in the previous pages, its implementation has been very slow due to inadequate commitment, sincerity, and boldness on part of the government leadership.

The third phase in the active governmental management of agricultural development started in 1973. The Masagana 99 programme of the government is a model in orchestrating the credit, technology, and market variables in the agricultural development process. It is an improvement over the approach of the 1960s because the National Food and Agriculture Council (successor of the RCPCC of the 1960s) operationalised the concept of the systems approach to technological change. Fertiliser is effective only if there is adequate water. Modern seeds are high-yielding only if fertiliser and irrigation are adequately available. High yields require market support. These relationships involve transactions which must be financed by giving credit to the poor farmers. The coordination of these interrelationships is built into the National Food and Agriculture Council because the Council members include, among others, the local banks (credit), the National Grains Authority (market), National Irrigation Administration (water), Bureau of Plant Industry (seeds), Bureau of Agricultural Extension

(technology transfer) and the College of Agriculture and International Rice Research Institute at the UP at Los Banos (technological research).

Technological breakthroughs and the immediate physical effects from them ordinarily tend to result in exuberance and even euphoria, which usually delay institutional reforms and bold policies needed to accelerate agricultural development. Fortunately, the present Philippine government seems to be cognizant of this, as evidenced by some of the reforms it has instituted. Among others, these include agrarian reform, cooperatives development, population planning and nutrition. Nevertheless, Philippine agriculture has still a long way to go along the development path before it can be considered well-developed. This is not to say that the present efforts are neither efficient nor effective. It only means that the development process is so complex and its elements so interactive that the task becomes greater and more difficult with the passage of time. Almost by definition, development is never-ending.

B.M. Verma

Administration for Agricultural Development in Thailand*

Thailand is traditionally an agricultural country with about 85 per cent of the total population engaged in agriculture and allied occupations. The total area of the country is 513,447 sq. kilometres (200,000 sq. miles). According to the 1965 land classification survey carried out by the Ministry of Agriculture, the total agricultural land in the country is 75.6 million rai (1 acre is approximately 2.5 rai). The population of Thailand is estimated to be between 19 and 20 millions. It has a strong monarchical tradition. The Thais are an ancient people and their institutions, attitude and values are deeply rooted in the past. The country while undergoing socio-economic changes is side by side maintaining its link in the past. Many changes have been occurring in the country in different walks of national life including in its social and political institutions. Changes have also been observed from absolute to constitutional monarchy with a process of democratisation initiated in the country recently.

Agricultural economy is the basis of rural life. About 90 per cent of the cultivated land are devoted to rice production. The contribution of agriculture in the national income has been steadily declining from 34.8 per cent in 1965 to 31.9 per cent in 1969 and to an estimated 29.4 per cent in 1971. Though the share of agriculture in the national income has been decreasing, the volume of production has increased every year. Between

*The author is thankful to Dr. K.S. Nair for a meaningful discussion and help in the improvement of this paper.

1963 and 1969 agricultural production has increased 48.1 per cent and this can be attributed to the increases in crop production of 37.2 per cent, timber 59.1 per cent, livestock 16.2 per cent, and fishery 17.7 per cent. About 85 per cent Thai farmers are owned their own land and are self-sufficient or quasi-self sufficient.

RESEARCH STUDY

A study was conducted in the month of July, 1975 by a research team* to understand and highlight the dominant characteristics of administrative set-up for an agricultural administration and to examine whether these characteristics are sufficient enough to cope with the requirement of agricultural development in the highly centralised administration of Thailand, of different levels, *i.e.*, central, provincial (Changwad) and district (Amphur).

The focus of this study is to explore the administrative problems and practices connected with the agricultural planning and development programmes with special reference to yield problems of agricultural administration. Effort has been made to find out the constraints that come up in the way of the administrative machinery in carrying out the task relating to agricultural development and their solution chalked out by policy makers and programme implementers. The paper also throws light on the organisational structure for agricultural development along with complex problem of coordination and programme evaluation.

RESEARCH METHODOLOGY

For conducting this study research team held discussions with the official of various departments of the Ministry of Agriculture and Cooperative, Ministry of Interior, Office of Prime Minister, etc., Provincial and district level officials like Governor of Nakorn Pathon and district officials of Thainyaburi and Ongkorak who were actively engaged in agricultural development. The collected data through unstructured interviews with officials along with documentation were further supple-

*The research team consisted of Dr. B M. Verma, Dr. K S. Nair (IIPA) and Shri D.N. Kulkarni (Bombay Local of Branch IIPA).

mented by discussions with leading academicians¹ of National Institute of Development Administration (NIDA) and Academy of Local Government Administration (ALGA) at Bangkok. The team also have the formal discussions with the officials and non-officials for clarifying certain points cropped-up during the course of interviews.

Necessary information regarding the organisational structure; policy formulation; administrative practices; problem of coordination and field administration—headquarter and field relations—inspection system; relation between specialist and generalists, training, research and development for agriculture were collected through interviews with the officials who were directly incharge of either division or departments in the Ministry of Agriculture.

Administrative Set-up

Thailand has a highly centralised administrative set-up with all powers concentrated in National Government in Bangkok. The Government of Thailand has been parliamentary in character since the introduction of constitutional reforms in 1932. The government power is exercised through different agencies such as Legislature, Executive and Judiciary. Each one is independent in its own field as laid down in Constitution. At the apex of governmental system, is the King, "who exercises the executive power through the Cabinet?" Although the King is the executive head, the real power is vested in the Council of Ministers, headed by the Prime Minister is assisted by two Deputy Prime Ministers and the Secretary-General. The Secretary-General of Prime Minister is a political appointee, responsible to the Prime Minister while the Secretary General of Council of Ministers has Civil Service status. He also acts as the Under Secretary in the office of Prime Minister and is the head of civil service hierarchy.

Territorial Administration: For the territorial administration purposes, Thailand is divided in 71 provinces (Changwad), each of which is under the authority of Governor (Pooraraja-

¹In this connection Prof. Chalermart Champanon, Dean of School of Public Administration, Prof. Phaibul Changrien, expert in Agricultural administration and Prof. Pha expert in Local Government Administration, National Institute of Development Administration (NIDA), Bangkok, were consulted.

karan), and the exercise of the power, the Governor is assisted by a province Board known as Kamakrommakaran Changwad. The Governor acts as the *ex-officio* Chairman of this Board which is composed of the chief officials of the functional ministries operating within the province such as revenue, education, agriculture, public health, and police. These officials are directly responsible to their Director General in Bangkok though for disciplinary purpose, they are subordinate to the Governor of the province in which they are stationed. These provinces are further divided into 539 districts (Amphurs) and 34 sub-districts (King Amphurs). The district is headed by a district officer (Nai Amphur) who is under the direct supervision of the Governor. He is also the chief administrative officer, the chief magistrate and the reporting officer for various ministries work as a collector of Central Government Taxes beside being principal coordinating officer. He may be assisted by one or more Assistant district (Palad Amphur). In each of 71 Changwads (Provinces), there is a Changwad Council. The Changwad Council is at present wholly elected and can be described as an attempt to introduce an elements of democratisation and local participation in an otherwise highly centralised territorial system. It is composed of 24 members.

The next lower territorial unit of administration is known as tembols (communes). Each tembol is headed by a 'Kamaan' (Headman) who is chosen by the popularly elected village headman within the 'Tembol' from among themselves. The exact number of such communes varies from one district to another, but 20 could be taken as an average figure. There are in all 4,700 rural entities (Tembols) in Thai territorial administrative hierarchy. The Tembol is composed of 'Muban' or villages. It is administered by the 'Pooyaiban' or village-Headman, who is popularly elected by matured citizens of the village. There are in all 49,832 villages or 'Hemlets' (Mubans) in Thailand.

Organizational Structure

In Thailand, Ministry of Agriculture and Cooperatives is responsible for the formulation and implementation of the national agricultural policies and for preparing a plan for agricultural development in consultation with National Eco-

nomie and Social Development Board (NESDB)² and with the approval of Cabinet. The Ministry is presided over by the Minister for Agriculture who is assisted by two Deputy Ministers who are also members of the Cabinet. The permanent head of this Ministry is the Under-Secretary of State. He is assisted by three Deputy Under Secretaries, one of whom is incharge of cooperative movement in the country. The other two Deputy Under-Secretaries respectively look after the administrative and technical functions of the Ministry. The organisational structure of the Ministry is composed of nine departments and divisions. The departments are as follows: (i) Department of Agriculture, (ii) Fishery, (iii) Livestock, (iv) Royal Forestry, (v) Royal Irrigation, (vi) Agricultural Extension and Development, (vii) Cooperative Promotion, (viii) Cooperative, and (ix) Auditing, each of which is headed by a Director-General and assisted by two or more Deputy Directors General. Each department, in turn, is divided into Divisions and Sections. The Chief of the division is usually Grade I Officer, although a few of them belong to Grade II. Similarly, chief of the section is mostly in Grade two, though few of them may also belong to Grade III. All officers of the rank of Director and above belong to special Grade.

The Departments are headed by Director Generals. Most of the head of the departments in the Ministry are specialists in their own fields. There is no problem of conflict between specialist and generalist for the top administrative and policy making positions like that of Under Secretary of the Ministry.

²A National Economic Development Board was set up in Thailand in July '59 charged with the functions of Central planning agency for the country as a whole, comparable to the Planning Commission in India. Later, it has been renamed as the National Economic and Social Development Board (NESDB) which is responsible for the formulation of comprehensive and integrated plans of a five year duration for the overall development of the country. This Board studies and analyses the national, economic and social condition and problems; scrutinises the plans and programme of development submitted by the government agencies and state enterprises; integrates these plans and programmes into an overall sanctioned plan; studies financial and resource availability, to determine ways and means to satisfy the financial needs of Governments; prepares annual budget proposals; reviews foreign aid proposals; surveys and reports performance result; and gives advice and comments on the work programme of Governmental agencies and state enterprises.

Another unique feature of Thai Administration is the total absence of any administrative cadre like the IAS and IPS as is in India. Thailand has a general service in which any person who joins the lower hierarchy can rise to the top most position in service by good work and academic achievements

In each department, the Director General holds regular Ministry meetings with the Deputy Directors General and the head of various divisions at which a detailed review of the departmental activities is taken and matters of policies and priorities are discussed and decisions are arrived at. The policies of the department are formulated by consultation between the Director-General and his deputies and divisional heads. The policies, the priorities, the budgetary requirement and the future projects of the department, are decided upon in the department through consultation and the discussions of these important departmental functionaries. These departments send their proposals to the Ministry for its approval. Again, at the Ministerial level, consultation takes place amongst the Ministers, the Under Secretaries, the Director General and the Director General of the department for the final decision of policies and programmes of the Ministry including all the departments.

The Ministry has a project division which is involved in a continuous scrutiny and monitoring of all departmental projects and programmes and helps the Ministry in the work of coordinating the proposal of various departments. It should be stated that in shaping the final policies of the Ministry, the agricultural ministry of the government and the likely budgetary allocations play a very important role, and the departmental proposals have got to be tailored keeping these facts in view. The finance has provided to be always a constraint on the legitimate demands of the department and their future plans. A number of committees³ also help the Ministry in formulating the policies. Some of these are statutory committees—chaired by the Minister or the Under-Secretary of State, or the Deputy Under-Secretary or the Director General. These committees send their proposals directly to the Ministry.

³(1) Farmer Acts National Committee, (2) Accelerated Production Committee, (3) Land Consolidation Committee, (4) Land-Reform Committee, (5) Agricultural Irrigation Committee, (6) Long-term Credit Committee, (7) Forest and Agricultural Organisational National Committee, (8) Marine Fisheries Committee,

These committees play an important role in bringing to bear the relations of the field situation on the policies of the Agricultural Ministry. The Minister takes the policy proposal to cabinet for its approval. In principal, thereafter the proposals are submitted to the NESDB which is also chaired by the Prime Minister. The NESDB integrates the Ministry programmes with the National Plan. After which it is again considered by the Cabinet which finally approved. The NESDB plays an important role in the fixation of the inter-ministerial priorities, by virtue of the fact that the Prime Minister presides over it. The Prime Minister also makes a broad statement of the policies every year in the National Assembly for its approval.

On the basis of the information received from the field officers, detailed proposals of programmes and projects are formulated by the various departments and transmitted to the Ministry. There is a constant flow of information from the field office to the ministry by way of reports relating to the local needs and the progress of the various projects and schemes, etc. The officers of the department including the Inspector General of the Ministry and the Inspectors in various departments pay regular periodical visits to selected areas. The feedback which is thus available enables the departments to formulate realistic and need based programmes and policies. At the level of the Ministry, project division which plays a very important role in analysis, examining and scrutinising the proposals of various departments and bringing about necessary coordination among them. The budgetary aspects of the various programmes and their integration in the overall policy of the Ministry is also taken care of by the project division. This is, thus, a very important staff agency of the Under-Secretary of State in the Agriculture and Cooperative Ministry which enable them to carry out effectively his major role as the prime supervisor and coordinator of the Ministry's activities and programmes. The project division also carries out an evaluation of certain projects on a selective basis which enables it to follow up the departmental programmes and to gain the necessary budget for a purposeful monitoring of the on-going programme. As a result, the Ministry can get a continuous overall picture of the current and prospective programme and

projects of the various departments under the Central Government. This division was set up three/four years back and has under it four branches, namely, Programme Planning, Project Proposal, Implementation and Administration.

Administration and Management of Agricultural Development

'Agriculture' is the foundation of Thai economy, which includes a broad spectrum of activities essential for sustained agricultural development, planning, programme and evaluation. Agricultural development has been assigned the highest priority in the Thai's third plan.⁴ The principal policy objectives in Agriculture enunciated by the Third Plan document are as follows:

- (i) to raise the level of income standard of living and economic status of farmers through accelerated farm production, most efficient distribution and social development;
- (ii) to increase export of agricultural products through increased efficiency in production and better marketing techniques;
- (iii) to reduce under employment and under utilisation of farm labour through a programme of modernised labour intensive techniques;
- (iv) to strengthen the economic and social position of farmers by providing Farmers Association and Farmers Institutions.

Different dimensions of the problems connected with the administration and management of agricultural development have been dealt with briefly and examined critically under the following heads, keeping in view the existing ecological, political administrative set-up and the organisational structure connected with the different plan and programmes. The system of programme coordination, implementation and evaluation within the framework of existing policy making for agriculture production are also dealt with.

Policy-Making in Agricultural Administration. Thailand is

⁴The first five-year plan covered the period of 1961-66 and its principal goals were the advancement of political stability and economic growth. The second five-year plan 1966-71 was aimed at an acceleration and diversification of agricultural production and improvement its quality as to increase the real income of farmer.

highly centralised State where all policies and decision-making power is concentrated in the Central administration represented by the Ministry of Agriculture and Cooperatives. This Ministry is to:

- (i) determine the policy and to make a plan on agricultural development of the nation in consultation with NESDB;
- (ii) communicate, cooperate with other governmental agencies and organisations concerned for the common purpose of agricultural development;
- (iii) study, research and experiment in various fields of agriculture such as crops, fishery and livestock to increase both quantity and quality of production;
- (iv) promote and disseminate to farmers and interested people the modern agricultural techniques and methods as derived from the results of the study;
- (v) supervise, promote and assist in meeting up agricultural institution such as farmer cooperatives;
- (vi) investigate, provide and maintain and/or develop natural resources such as land, water and forests;
- (vii) supervise and carry out activities related to plant quarantine and pesticide control according to legislative act and regulation.

The functions and responsibilities of the Ministry of Agriculture and Cooperatives complies with the policies and decisions of the Cabinet directives, instructions and orders from other ministries, departments and other public agencies have been carried out by the provincial and district authorities. The provincial and district administration have practically not much say in determining the policies, priorities of government programmes. They are so ill-equipped for the role of planning and the policy formulation. The provincial and district administration set up have been devised in such a way as to implement the policies, directives and instructions, etc., of the central administration. They do not have the necessary organisational set-up to formulate policies and long range programmes and projects. Recently, there is a move to provide opportunities to these agencies for planning and policy formulation. These proposals are at present, under consideration and officials were hopeful of implementing them very soon. The officials contacted also expressed satisfaction with the steps envisaged by the Government in

the direction of administrative reform and innovations. Thus, in Thailand, efforts are being made to renovate and improve upon the age-old administrative machinery to make it powerful enough to handle modern problems. Even at the ministerial level, the Government is proposing to strengthen the planning machineries.

Even though agricultural policies get top priority in the Government scheme of development, many of the development officials told us that lack of funds is one of the major problem in the developments. Apart from the Governmental grants, many of the agricultural projects, irrigational scheme, etc., get liberal financial assistance from International Agencies. Non-availability of technically qualified people and skilled workers is the major constraint in carrying out large scale agricultural development programmes. There are very few institutions⁵ in the country to train people in modern agricultural techniques. Some officials are sent abroad every year for getting training in modern agricultural technology. Agriculture in Thailand is still in an underdeveloped stage. It is not yet completely mechanised and traditional methods of cultivation still prevail in many parts of the country. Farmers are provided with fertilisers, insecticides and pesticides, improved variety of seeds through cooperative societies. Apart from this they are given the loans for cultivation, land improvement and for purchase of land, the cooperatives also do marketing operations by collecting commodities from the farmers, by paying them reasonable price. In implementation of the price Guarantee schemes of the Government the Institute of Cooperative plays a leading role. At present with few exceptions, every district has got at least one Cooperative which handles both credit and marketing requirements of the farmers.

Coordination: One of the most complex problems involved in agricultural development in Thai administration is the lack of coordination all through the hierarchy. In the Thai bureau-

⁵The Academy of Local Government Administration (ALGA) and Academic Bureau and Regional Government and Administrative Bureau (AGAB) are conducting the Academic programme—democracy development programmes, security programmes etc. These programmes under the Ministry of Interior (MOI) in general and Department of Local Administration (DOLA) in particular were conducted.

cratic system, coordination among various departmental agencies has hardly existed. In the top administrative agencies, such as the office of the Under-Secretary to the Prime Minister, the National Economic Development Board, and the Budget Bureau, duplication of work has been apparent.⁶ Coordination is done all through the hierarchy by way of formal and informal discussion and periodical reports. In the Ministry of Agriculture and Cooperatives regular monthly meetings are held among the senior officials including the division heads for coordinating the activities of the Ministry. It also receives periodical reports from various departments under it. The Ministry also receives regular feedback from the field agencies by way of numerous reports. Nevertheless, the communication system cannot be said to be effective in improving better coordination.

"Prof. Kingsbury speaks of coordination as the primary task of management. The manager utilised formal and informal organisation to achieve coordination of effort in the large enterprise. When great number of people are brought together, they are, as we know, divided into groups and sub-groups for the purpose of carrying on the various specialised phases of the overall tasks. The organisational structure become or should become, a coordination device in itself. But coordination involves much more than simply providing a sound structure of relationship. There are many techniques for achieving harmonious activity within the enterprise. Prof. Kingsbury further elaborates that implicit in the concept of coordination is authority to command and also ability to lead. The exercise of authority to command and also ability to lead. The exercise of authority is necessary in any large organisation, and we have said that the Organisation is a coordinating device. But coordination is not achieved by command alone. Rather it depends principally upon the securing the agreement. Informal means of coordination should not be overlooked, since they often furnish valuable supplements to formal techniques."⁷

⁶Phaibul Changrien, "Evaluation of Agricultural Development in Thailand (1961-1976)", Thai Waterna Panich, C-Lbe. 599-Maitrichet Road, Bangkok, 1972, p. 41.

⁷Joseph B. Kingsbury, *et al*, *Introduction to the Principle of Public Administration in Thailand*, Bangkok, Institute of Public Administration, 1959, pp. 1311-32.

The main reason for poor coordination in Thai Administration is multiplicity of agencies involved in the handling of certain functions. For example, the Ministry of Interior is handling certain functions which very well belong to Ministry of Agriculture and Cooperatives. Accelerated Rural Development Projects are directly managed by the Ministry of Interior. It encroaches upon areas which legitimately belong to other functional Ministries and departments. A general complaint against this Ministry is that after taking over the function unattended to by other department, it tries to expand the area of operations resulting in unnecessary competitions and duplication of work. In this connection Prof. Phaibul Changrien has highly observed:

"The top Thai administrative agencies are building their own empire. They do not trust each other. Because of the traditional belief that their power will be lessened if their is coordination, there is delay and overlapping in the working system."⁸

The problem of coordination is more complex at the levels of the province and district. The Provincial Governor is heading a team of officers from different ministries and departments over whom he has only little control. At the district level, the coordination is the function of the district officer who is in-charge of all the civil servants in the district. He also like the Governor does not have absolute control over his subordinate officials. Most of the departments send their representatives to the district to carry out their departmental task for which they are directly answerable to the concerned central departments. The district officer also faces all the problems in relation to coordination like his boss, the Governor. Prof. Siffin believes that the problems of bureaucratic coordination, bound up as they are with the characteristics of authority and value found in the Thai system, may grow greater in the near future, although they have so far been met by new administrative instrumentalities.⁹

⁸Phaibul Changrien, *Evaluation of Agricultural Development in Thailand (1961-1976)*, Thai Walana, Panich. C.Ltd., Mailnchet Road, Bangkok, 1972, p. 253.

⁹William J. Siffin. *The Thai Bureaucracy: Institutional Change and Development*, Honolulu, East-West Centres Press, 1966, p. 248.

Programme Implementation: The policies projects and the programmes of the Central departments and ministries are implemented in the field by the officers who are stationed in the provinces and districts. They are, for day-to-day administrative work under the supervision and direction of the Provincial Governors in the Province and District Officers in the district. District officers are the Chief Coordinators in the provinces and district. For the efficient and successful performance of the functions these district officers in the province and district are directly responsible to the departments and ministries. Other problems faced by the administration in the field of agriculture, and in achieving the targets with the existing administrative set-up are lacking of technical know-how, non-availability of technically qualified people, skilled workers, lack of training facilities, poor coordination, overlapping of functional conflict of policies; excessive concentration of power in Bangkok and in-dequate delegation powers to the field agencies, lack of adequate facilities, paucity of funds; etc.

One of the striking features of Thai Administration is that all policies and programmes are generally laid down for the entire country and the provinces and districts have no policy-making role. The field agencies have no power to make any change in the policies on their own initiation. They are only the tools of implementation of the central agency. Because of the absolute dependence the headquarters and field relations are very smooth and cordial. Some of the departmental officials felt that the Bureau of the Budget and the civil-service commission were not very cooperative in achieving their departmental objectives. While the Bureau of Budget controls the funds, the civil service commission controls the personnel. In determining the personnel requirement the civil service has got a decisive say. The attitude is not very much appreciated by the departments which always make inflated demand for the personnel. The role of the Bureau of Budget also comes in for critical comments. It is this agency which examines the project proposals from the technical and financial point of view and allocates funds. The main agency responsible for determining the policies and priorities for the entire country is the NESDB. Once a project is cleared by the NESDB, then it is the duty of Bureau of Budget to allocate money. The

Bureau of Budget after taking scrutiny of the project proposal, normally slashes down the original estimates of the department. The Civil Service Commission considers the demand for personnel only after the project is cleared by the Budget Bureau. In the same way Budget Bureau would not consider any project/proposal unless it is cleared by NESDB. Many of the departments find the practice and procedures in the Bureau of Budget and the Civil Service Commission, irksome, dilatory and obstructive.

PLAN EVALUATION

One of the unique and novel features of Thai Administration is the *Institution of Inspector General*. In the Ministry of Agriculture and Cooperatives alone, there are five Inspectors General who have the status of departmental heads who are responsible directly to the Under Secretary of the Ministry. These Inspectors General look after the inspection work of agriculture and cooperative amongst themselves. For this purpose, they have worked out a territorial division. The Inspector General whom we interviewed has 16 provinces under his charge in the North-East in Thailand. He also plays a positive role in evaluating the work of officials and help them in performing their duties. There was not a wide gap between the role-perception and role-expectation of these officials as such the Institution of Inspector General is serving as a model in accelerating the development and achieving the targets of Plan and Projects in time. For developing countries like India where the gap in performance is too wide, other institutions of Inspectors General should serve as a model in accelerating the development and achieving the target of the plan and the project in time. This office could legitimately be described as an institution of feedback and catalyst of change.

Mr. Reeve W.D. has rightly observed in his work, 'Public Administration in Siam' that he very important defect in the system as it operates in Siam is that the requirement or rather the practice to refer so many matters to a higher authority for approval slows down the work of many of the departments". This has to be viewed in the background of total absence of any local autonomy and initiative. The system, in fact, discourage any independent action by provincial and district level

officials. They are being closely-guarded and supervised by the Ministry of Interior to which they belong and are legally responsible for their actions.

CONCLUSION AND RECOMMENDATIONS

Administrative infrastructure in Thailand, like other developing countries, is not sound enough to carry out large scale agricultural development programmes. Since Thailand has a huge rice surplus and was not facing the stresses and strains of deficit states like India, the administrative problems relating to agriculture tended to get neglected. No sense of urgency [was felt so far in combating these problems. Currently the price of crops have come down heavily in the international market and consequently the income from export has declined. As a result a new awareness has come to the authorities about the need for improving the administrative infrastructure. The capacity of Thailand to carry out large scale agricultural development programmes is dependent upon the extent of modernisation it can bring about in its old fashioned bureaucracy. Sufficient number of trained and technically qualified people could plan and carry out large and complex projects.

For better coordination of work, sweeping changes are necessary in the organisational structural of Thailand. It is also necessary to define clearly the power and functions of important functionaries like the Governors, and District officers who are directly incharge of development to enable them to coordinate the work and also to guide, supervise and control the official under them. It is very essential to strengthen the offices of Governor and District officers for effective control over the officers of numerous functional department. In fact, most of the coordination problems faced by the field agencies emanate from the peculiar nature of the administrative hierarchy. During the course of investigation it was communicated that Government proposes to introduce widespread reforms strengthening the weak spots of the bureaucracy. A Committee was already looking into the problems of the provincial Governors with a view to strengthening his position *vis-a-vis* the provincial functional officers. The office of District officer is also being strengthened by restoring some of the powers which is enjoyed before but later on taken away from him. Policy Planning set-up

at all levels is also being reoriented by making provisions for appropriate organisational arrangements. In fact, it appears that Thailand is undergoing in an era of major administrative innovations with a view to modernising the age-old organisational structure. It is hoped that when all these changes are carried out, many of the ills of the Thai administration could thus be solved.

Mahinda Silva

Management of Agriculture in Sri Lanka

SOCIO-ECONOMIC BACKGROUND

The performance of Sri Lanka's economy over the last decade could be divided into two phases. In the first phase from 1966 to 1970 there was a marked increase in the national output when the GNP at constant (1959) factor cost prices had a rise of 23.9 per cent giving an average annual growth rate of nearly 6 per cent. The highest growth of the GNP in one year was also witnessed during this period in 1968 when a rate of 8.4 per cent was achieved.

In the second phase from 1970 to 1975 the average annual growth rate of the GNP was about 2.9 per cent. The latter part of the second phase was actually a period of recovery rather than of advancement owing to the serious setbacks that the country had to suffer as a result of the insurgency in 1971. As against a 4.1 per cent growth from 1969 to 1970 the growth from 1970 to 1971 was only 0.4 per cent. One factor responsible for the low growth rate in the second phase was the severe drought that prevailed from 1972 onwards. This led to a marked drop in output specially in the agriculture sector which contributes as much as 35 per cent of the GNP.

There were also certain external forces which affected the economy of Sri Lanka during the second phase. The worldwide food shortages which pushed up the prices of essential food imports like rice, flour and sugar and the steep mark-up of the price of crude oil and fertiliser led to an acute strain on the balance of payments and the import capacity of the

country. Consequently, the availability of industrial raw material was reduced to negligible proportions resulting in a drastic reduction in the output of the manufacturing sector as well.

The biggest contributor to the GNP has always been the agriculture sector whose share in 1975 was Rs. 3,602 million. The share of agriculture in percentage terms, however, has been falling over the last decade as mining, manufacturing and service sectors were increasing their output by broadening their activities. The relevant figures are as follow:

<i>Main Industry</i>	<i>1959</i>	<i>1966</i>	<i>1973</i>	<i>1975</i>
Agriculture	39.1	36.1	32.6	32.4
Mining	0.5	0.5	2.6	2.2
Manufacturing	11.6	12.9	13.6	13.2
Services	12.3	12.7	13.3	13.6
Others	36.5	37.8	37.9	38.6
Total	100.0	100.0	100.0	100.0

The expansion of income originating in plantation agriculture and in the mining and manufacturing sectors had some direct and indirect effects in raising the level of economic activity in trade, transport, personal, recreational and other service sectors. The contribution made by the tourist industry in raising the output in the services sector has been significant. Similarly, the increased output in the mining sector is mainly due to the tremendous expansion in the gemming industry. The export of gems increased from a meagre Rs. 3 million in 1971 to Rs. 12 million in 1972 and to Rs. 180 million in 1975.

The external trade situation which was unfavourable to Sri Lanka during the last decade worsened in its latter phase. The import prices of all essential food items increased by over 200 per cent in 1973 over the levels observed in 1971. Import prices of other essential items such as petroleum, fertiliser and drugs also increased markedly in 1973 and 1974. The overall

short supply of grains in the world market, the wage price inflation in the advanced countries, the foreign currency realignments in respect of major currencies of the developed world and the pressures applied by the oil producing countries to get better prices for their exports have all contributed to the escalation of the prices of Sri Lanka's imports. Consequently, as increased allocations of foreign exchange had to be made to sustain the levels of essential imports, the foreign exchange requirements of the producing sectors had to be curtailed. This seriously affected the rate of growth in these sectors as well as in the entire economy.

The low income growth achieved during the last few years also seriously affected the savings capacity of the community. Gross domestic savings dropped from over 16 per cent of GDP at market prices in 1970 to about 10 per cent in 1974. Private consumption expenditure in 1974 increased over 1973 by as much as 37 per cent whereas the overall increase in GDP at current market prices during that period was 30 per cent. However, a drastic fall in investment in 1974 was averted by a substantial infusion of foreign capital which accounted for more than 4 per cent of GDP at market prices. Despite large increases in current expenditure, the Government too was able to generate current surpluses of Rs. 129 million in 1973 and Rs. 242 million in 1974.

POPULATION GROWTH

Sri Lanka's population is predominantly rural although the rural component has been declining slowly and steadily over the years. In 1946, 84.6 per cent of the population was classified as rural, whereas in 1971 only 77.6 per cent was found to be living in rural areas. While the increase of the urban population from census to census is partly due to administrative action of upgrading rural areas as urban areas, it is also due to the fairly high natural increase and rural-urban migration.

The share of the rural population in the total population varies from district to district. In certain districts the rural population consists of more than 90 per cent of the total.

Agriculture constitutes the biggest source of employment and has continued to be so over the years except for the fact that its relative importance has been declining in the recent past.

Industrywise classification of the employed population is as follows:

<i>Main Industry</i>	<i>1963</i>	<i>1971</i>
Agriculture	63.4	61.0
Manufacturing	8.9	8.9
Construction	2.3	3.0
Trade	5.9	6.6
Transport	16.7	17.3
Total	100.0	100.0

INCOME DISTRIBUTION

According to the Socio-economic Survey of 1969/70 over one-half of all individual income-receivers in Sri Lanka had money incomes of less than Rs. 100 per month and about four-fifths had less than Rs. 200 per month. In the urban sector the number reporting money incomes of less than Rs. 100 a month was only about 30 per cent of all the individual income receivers and those with less than Rs. 200 per month was about 60 per cent. Correspondingly, these low income groups accounted for somewhat larger percentages in the rural sector particularly on estates.

More than two-fifths of the households in both rural and urban sectors, however, had two or more income earners within each of them. Consequently, households with monthly incomes of less than Rs. 200 per month formed a smaller percentage of the total number of households than individual income receivers in this income range as a percentage of the total number of income-receivers. Incidentally, the percentage of households with more than one income-receiver was very much higher on the estates than in the rest of the rural sector.

In addition to money incomes, households had also non-monetary incomes of various kinds. Nearly one-fifth of the total income of the rural sector was in the form of non-monetary income. The distribution of households by monthly incomes is as shown in the table on next page.

<i>Income range of households (Rs. per month)</i>	<i>Number of households</i>			<i>All Island Total</i>
	<i>Urban</i>	<i>Rural</i>	<i>Estates</i>	
Below 200	23.5	47.9	61.5	45.5
200-399	39.3	34.5	34.1	35.2
400-599	16.4	11.2	4.0	18.6
600-799	8.5	4.2	0.4	4.5
800-999	5.6	1.3	—	1.8
1000 and over	6.7	0.9	—	1.8
Total	100 0	100.0	100 0	100.0

LAND OWNERSHIP

According to the Census of Agriculture of 1962, 4.6 million acres of land were operated as Agricultural holdings of which 3.1 million or 67 per cent were classified as small-holdings of 50 acres or less and the remaining 1.5 million acres as estates of over 50 acres. While most of the land classified as estates was owned singly, the tenure structure was more varied for the small-holdings. The particulars are shown in table on next page.

The State held 76 per cent of the total land area of the country amounting to approximately 12.3 million acres. Nearly 720,000 acres (6 per cent) of the land had been alienated by the State by 1962—610,256 acres under the Land Development Ordinance mainly for settlers under irrigation schemes and for village expansion and 109,091 acres leased-out to private operators. According to the report of the Land Utilisation Committee¹ the extent alienated by the State was 1,264,037 acres at the end of 1966.

¹*Report of the Land Utilisation Committee*, August 1967, Government Press, Colombo, 1968.

TENURE STRUCTURE OF LAND OPERATED AS AGRICULTURAL HOLDINGS IN 1962

	Small-holdings		Estates		Total	
	Acres	Per cent	Acres	Per cent	Acres	Per cent
Owned-singly	1,539,929	49.3	1,196,601	77.7	2,736,530	58.6
Owned jointly (thatumaru)	50,048	1.6	15,003	1.0	65,051	1.4
Owned jointly (others)	169,542	5.4	208,795	13.6	378,337	8.1
LDO grant/permit	601,446	19.2	8,810	0.6	610,256	13.2
Leased—State land	90,946	2.9	18,145	1.2	109,091	2.3
Leased—Private land	85,581	2.7	27,755	1.8	113,336	2.4
Tenancy—ande	280,272	9.0	1,513	0.1	281,785	6.0
Tenancy—others	58,880	1.9	6,943	0.5	65,823	1.4
Tenancy—rent free arrangements	249,337	8.0	57,007	3.7	306,344	6.6
Total	3,125,981	100.0	1,540,572	100.0	4,666,553	100.0

SIZE OF HOLDING

The Census of Agriculture of 1972 recorded 1,169,801 agricultural holdings covering an extent of 4 67 million acres. The distribution of these holdings by size is as follows :

Size (acres)	Holdings		Area	
	No.	Per cent	Acres	Per cent
No Land	3,490	0.3	—	—
Under $\frac{1}{2}$	288,140	19.5	58,120	1.2
$\frac{1}{2}$ - 1	182,260	15.6	118,810	2.6
1- 5	571,855	48.8	1,304,753	28.0
5- 10	132,408	11.3	852,396	18.3
10- 25	37,465	3.2	530,219	11.4
25- 50	8,311	0.7	262,085	5.6
50-100	2,811	0.2	192,024	4.1
100-250	1,654	0.1	246,632	5.3
250-500	643	0.1	224,230	4.8
500 and over	764		877,684	18.8
Total	1,169,801	100.0	4,666,553	100.0

The distribution of land by size shows that there are marked inequalities with just 3,052 holdings of 100 acres or more comprising 1,348,546 acres. In other words 0.2 per cent of the total number of holdings accounted for as much as 28.9 per cent of the agricultural lands. Acute fragmentation of land is indicated at the end by having 35.4 per cent of the holdings with less than 1 acre in extent. The agricultural sector in Sri Lanka can therefore be seen to be comprising predominantly of small operators and small holdings.

MAJOR CROPS

The agriculture sector of Sri Lanka could be divided broadly into two sub sectors, as the plantation sector and the peasant sector. The plantation sector consists of tea, rubber,

coconut and a few other crops which are produced mainly for export. In the peasant sector the principal crop is paddy with other items such as subsidiary food crops, sugar cane, cotton and animal husbandry.

The area under tea is nearly 600,000 acres and this extent has remained almost static for more than a decade. But the production has varied between 496 million lb in 1968 to 450 million lb in 1974. The production increased to 471 million lb in 1975 mainly due to increased use of fertiliser and the incentive provided by the high tea prices fetched in the world market.

The area under rubber is nearly 570,000 acres. Although there has been no appreciable change in the extent under rubber during the last decade, the production of rubber has shown an upward trend up to 1979 when a level of 351 million lb was reached. Since then the production declined and dropped to 291 million lb in 1974 but recovered again with an increase of 12.7 per cent in 1975.

The acreage under coconut is about 1.5 million. Coconut is cultivated in almost every district in the island but most of it is concentrated in a few districts like kurunegala (34 per cent), Colombo (19 per cent and Puttalam (13 per cent), Production estimates of coconut are not as reliable as in the case of tea and rubber but they are sufficient to gauge the trends in production. In 1961 the production was 2.6 million nuts but it dropped to 2.4 million in 1970. The highest production so far recorded was in 1972 when 2.96 billion nuts were produced. In 1975 the production is estimated to be 2.45 billion nuts. The average yield of coconut is about 2.409 nuts per acre per year.

Of the other crops falling within the purview of the plantation sector; the production of cinnamon has shown a substantial increase since 1961. Cinnamon production was 127,000 cwts in 1961 and 246,000 cwts in 1970. Similarly the production of pepper has increased from 151,000 cwts in 1961 to 225,000 cwts in 1970 and the production of cardamon has increased from 33,000 cwts in 1961 to 35,000 cwts in 1970.

Paddy is grown in an area of about 1.2 million acres in the Maha season and in about half that acreage in the Yala season. Paddy production had a rapid increase from 1966 to reach the highest level so far achieved of 77.4 million bushels in 1970.

The insurgency in 1971 and the severe drought that prevailed thereafter seriously affected the production of paddy and the estimated output in 1975 is not more than 55.3 million bushels.

Among the subsidiary food crops the largest acreage is under manioc followed by chillies, maize and kurakkan. The area cultivated under these crops have increased rapidly in the last decade and in 1974/75 there were 225,642 acres under manioc, 102,672 acres under chillies, 95,128 acres under maize and 71,547 acres under kurakkan.

In Sri Lanka provision of irrigation facilities has been directed mainly for the cultivation of paddy and other subsidiary food crops. The area under major irrigation schemes is about 527,388 acres which is nearly 50 per cent of the total paddy lands.

TRADE

The main agricultural exports are tea, rubber and coconut and the principal agricultural imports are rice, flour and sugar. The total volume of tea exported in 1975 was 212.7 million kilograms at a value of Rs. 1,931.6 million. Although the quantity exported in 1974 was 128.1 million kilograms the value was Rs. 738.5 million. The drop in earnings in 1974 was mainly due to a fall in the price.

The quantity of coconut products exported in 1975 in nut equivalent was 845.8 million nuts at a value of Rs. 387.5 million.

The volume of rice imported in 1975 was 450,000 tons at a value of Rs. 964 million. Imports of rice increased by 57 per cent in 1975 over its level of 1974 mainly due to the fall in the domestic production as a result of the drought.

In 1975 the quantity of flour imported was 455,000 tons at a value of Rs. 1,024 million.

The volume of sugar imported in 1975 was 61,000 tons at a value of Rs. 268 million. Sugar imports were restricted in recent years and this provided the necessary climate for increasing local production of sugar substitutes.

GOVERNMENT POLICIES AND STRATEGIES IN RESPECT OF AGRICULTURAL DEVELOPMENT

A national agricultural policy is determined not only by

economic consideration but also by the social and political climate of the country. In order to understand the goal of national development and the place of agriculture in Sri Lanka, it is useful to make a brief reference to the perspectives of national development that emerged in the first two decades after Independence in 1948. Successive governments of post-independent Sri Lanka had a distinct bias towards that rural sector of the country. This is a process that commenced even before independence when the then Ceylon State Council voted considerable sums of money for development and welfare measures in the rural areas. This heavy rural bias in national planning and policy making was also due to an important political factor, namely, that the rural constituencies were preponderant in the legislatures before and after Independence. National development programmes during the period immediately before and after Independence contained large investments in social welfare measures as distinct from investments in direct economic development. The social welfare measures helped in building up a social infrastructure which included a national health service and a national education system which was largely free and embraced the rural areas in a near comprehensive way.

During the first decade after Independence the plantation sector consisting of tea, rubber and coconut was treated as the mainstay of the economy. A large range of consumer goods, including luxury and semi-luxury items, and nearly all items of food were imported liberally into the country. A great deal has been written in Sri Lanka about the large irrigation and settlement schemes in the dry zone which were established during the first decade after Independence. However, these investments were not related to a policy of import substitution or self-sufficiency in food. For a short period during the Second World War when imported food was not available, there was a drive towards an emergency food production programme to mitigate the shortages in imported food during the war-time crisis. With the end of the war and the return to normally of international trading conditions, Sri Lanka also reverted to the normal pattern of exporting the primary commodities of tea, rubber and coconut and importing practically everything else the country needed. The first signs of the vulnerability of these national policies began to appear

in the late 1950s when dwindling foreign exchange resources were inadequate to meet the growing demands of an increasing population. In other words, the three major problems of Sri Lanka in the current decade, namely, scarcity of foreign exchange, population growth and unemployment had already made their appearance.

Sri Lanka enjoyed a comfortable balance of payments position in the early fifties but by the sixties the situation had changed drastically. This was the combined result of falling export prices and rising import values. During 1960-70, the price of tea fell by 30 per cent and that of rubber by 40 per cent. Import prices rose at an annual average rate of 3.6 per cent between 1960 and 1969 (Hewavitarana, 1973). The outcome was a drastic decline in the terms of trade and a large increase in the external resource gap.² The initial reaction of the country to this situation was the imposition of a complex of trade and exchange restrictions in the early sixties. Later, the foreign exchange constraint was met partly by foreign aid and borrowings and partly by foreign exchange savings effected by domestic and food production restrictions on imports.

The deteriorating balance of payments situation was also accompanied by the other major problem of growing unemployment. It was in the sixties that the full force of the high rate of population growth made its impact on the labour market. The annual addition to the labour force was around 110,000-120,000 by the late sixties. The rate of unemployment was estimated to be about 14 per cent of the labour force in 1969/70 (CSD, Socio-Economic Survey). Recent surveys indicate a higher rate ranging from 18-24 per cent.³ In absolute numbers, the unemployed amounted to about 550,000 in 1969/70.

Almost all surveys have brought out the fact that unemployment is concentrated among the educated youth. The Socio-economic Survey 1969/1970 found that 83 per cent of the

²By 1975, the terms of trade half fallen to 46 from the base year level of 100 in 1967 (Central Bank 1976).

³Central Bank of Ceylon, *Labour Force Participation Rates Survey 1973*, Colombo, 1974; *Survey of Sri Lanka's Consumer Finances 1973*, Colombo, 1974. These figures are not strictly comparable due to differences in definition.

unemployed were between the age of 18-24 years. Over 27 per cent of them had at least passed the GCE (O) Level. The problem has been aggravated by the sluggish growth of the economy. The 1971 insurgency highlighted to some extent the gravity of this problem.

During the period 1950 to 1976 there have been several development plans in Sri Lanka which sought to posit goals of national development and the place of agriculture in national development plans. One of the earliest was the Agricultural Plan of the Ministry of Agriculture and Food issued in 1958.⁴ This plan made a comprehensive and critical survey of the land policies that had been followed up to that time and put forward programmes for developing the traditional export crops, the domestic food crops and several industrial crops such as sugar, cotton and cashew. The Plan also introduced the idea of agricultural development through the use of cooperative forms of organisation. In 1962 there was presented the Short-term Implementation Programme.⁵ This Implementation Programme highlighted the need to divert investments from social welfare to economic development and particularly agricultural development with a view to diversifying the economy and eliminating unemployment and underemployment. The mounting problem of foreign exchange resources also received considerable attention in the Plan.⁶

The Plan gave considerable attention not only to the traditional export crops but also to irrigation, land development and colonization schemes and the entire range of domestic agricultural growth including the question of tenurial reforms in paddy lands. During the period 1958-1965 the situation regarding the balance of payments and the employment problem had worsened. Increasing emphasis was being placed on expanding the export of the traditional export crops as well as on maintaining a sustained effort at increasing local food production. It was in this context that the Agricultural Development

⁴The Agricultural Plan, 1st Report of the Ministry Committee, Ministry of Agriculture and Food.

⁵The Short-term Implementation Programme, the Department of National Planning 1962.

⁶See Short-term Implementation Programme, Chapter 1.

Proposals 1966-70⁷ was presented to the country. These proposals were aimed at the development and modernisation of the traditional export sector and also specific areas of domestic agriculture which were to receive intensive attention. Increasing paddy production received a great deal of emphasis along with the development of selected subsidiary food crops. Expansion of fertiliser use, agricultural credit, irrigation and crop insurance received considerable attention. In the animal husbandry sector the main emphasis was to be on the production of milk and eggs.

During the period 1965-70 the foreign exchange situation continued to deteriorate even though a concerted effort was being made to increase local food production in some of the more important sectors. By the end of the 1960s it was becoming apparent that in spite of the large investments made in the rural areas since Independence, the basic problems of employment and food for the people had remained unresolved.

It was in this context that the Government issued the Five Year Plan 1972-76.⁸ The formulation of the Plan was undertaken by the Ministry of Planning and Economic Affairs which is under the Prime Minister herself. The policy objectives were laid down in discussions at the National Planning Council⁹ and the Council of Ministers and was in accordance with the common programme of the United Left Front¹⁰ which formed the Government after the general elections held in May 1970.

The detailed work of preparing the Plan was undertaken by technical committees and sectoral committees which consisted largely of officials drawn from relevant ministries and agencies of Government. The Plan was submitted for criticism

⁷*The Agricultural Development Proposals, 1966-70*, published by the Ministry of Planning and Economic Affairs, January 1966.

⁸The Five Year Plan 1972-76 published by the Ministry of Planning and Employment, Ceylon, November 1971.

⁹The National Planning Council is chaired by the Prime Minister and includes Ministers of the important Development Ministries.

¹⁰This was a coalition of the Sri Lanka Freedom Party (the major party in the National State Assembly) and the Lanka Samasamaja Party and the Ceylon Communist Party. Since 1975, the Lanka Samasamaja Party has left the Government and is in the opposition.

and discussion by Trade Unions and the parties to the Coalition.

One of the important economic and social objectives of this national Plan was to take measures to re-generate rural society and to make it more attractive to the young by modernising agriculture, making it more profitable and by setting up industries in the rural areas. The important objectives and strategies of the Plan can be summarised as follows:

- (a) to correct the imbalances in the economy and particularly the widening gap in the balance of payments;
- (b) to launch a major thrust in solving the problems of unemployments;
- (c) to raise the living standards of the low income groups, increase output particularly in agriculture and take appropriate measures to re-distribute income;
- (d) a massive effort at domestic food production supported by the banning of imports and the introduction of monetary, fiscal and other policies providing incentives to the rural sector;
- (e) the maximum utilisation of labour and local resources in which the matching of land and the people was to occupy a place of permanence;
- (f) the development of a new export sector consisting of non-traditional items of export; and
- (g) the decentralising of resources and decision-making powers to those directly concerned with the implementation and development programmes in the field.

From the above discussion it will be seen that the development of national policies in agriculture during the last decade in Sri Lanka have been directly related to the deteriorating foreign exchange situation and the large increase in unemployment and underemployment particularly among the younger age groups in the country. In facing this situation, national policy makers have adopted a two-sided strategy which carried with it a high degree of self-reliance. One was the policy of banning or drastically reducing the import of all items of food which had reasonable potential of being grown locally. Under this policy there has been a total ban on the import of a wide range of food items. Similarly, there has been a very drastic curtailment on the import of certain food items such as sugar.

In essential food items such as rice, wheat flour and infant milk foods the policy has been to continue to import adequate quantities and ensure a minimum ration in some of the commodities to the lower income groups in all parts of the country. These policy decisions regarding the stoppage or curtailment of a wide range of food items provided an invaluable atmosphere for the development of local production in these commodities. The outstanding examples are chillies, onions, milk and to a lesser extent sugar and the by-products of the sugar cane industry. The only food items which were banned prior to 1970 had been eggs and consumption potatoes. In both instances there was a dramatic increase in local production. However, these examples were not followed in the framing of food import policies until 1971-72 when the grave foreign exchange crisis made it necessary for the government to adopt these policies on a very large scale. During the period 1972-76 a variety of external factors (e.g., the escalation in prices of all imported goods) have substantially affected the quantitative assumptions and anticipations of the National Plan introduced in 1972. But this has not in any way altered the basic objectives and strategies of the Plan.

The other related policy measures in the agricultural sector dealt with the maximum utilisation of local resources (principally land and the people) and the provision of incentives across the entire range of the agricultural system. These matters require some elucidation.

The Policy Frame Regarding Land, Land Use and Agricultural Productivity

The legislative and policy frame with regard to agricultural land and its productivity in Sri Lanka is indeed a complex one which can be discussed only briefly within the scope of this paper.

The Land Development Ordinance No. 19 of 1935 is an important landmark in the land policies of Sri Lanka. It was under this Ordinance that large extents of State land was alienated principally to persons of the peasant class for development under specified conditions. Land alienations under this law have been going on until very recently.

The Paddy Lands Act No. 1 of 1958 was the first far-reaching

piece of legislation which sought to introduce reforms in the tenure and operations of paddy lands which were the mainstay of the domestic agrarian economy. The legislation was directed principally towards three objectives, namely, security of tenure for the tenant cultivator, regulation of the rent payable by the tenant to the landlord and the provision of incentives to owner cultivators as well as tenant cultivators to improve the system of production on paddy lands. Several important studies have been made of the operations of the Paddy Lands Act and the extent to which it has succeeded or failed in different parts of the country.¹¹ In general terms it can be stated that the implementation of this legislation introduced a new focus on the tenurial problems of paddy lands in Sri Lanka. However, the legislation has been only partially successful in safeguarding the tenurial right of the tenant cultivator, the regulation of rent and the improvement of the system of paddy cultivation. The Paddy Lands Act of 1958 also introduced a new institution known as the Cultivation Committee which was vested with the responsibility for implementing many of the provisions of the Paddy Lands Act. Reference will be made to the functioning of Cultivation Committees elsewhere in this paper. The Paddy Lands Act for all its shortcomings provided a framework within which a new relationship between land-owners and tenant cultivators could develop and created an environment in which future reform could take place. Although one could say that the provisions of the Act had failed to a large extent, the Act itself had not failed and has been superseded by the Agricultural Lands Law No. 42 of 1973. This Law went beyond the Paddy Lands Act in vesting Cultivation Committees with powers not only over paddy lands but over all agricultural lands within its area of jurisdiction. The Cultivation Committee established under the Paddy Lands Act of 1958 provided for an elected body of farmers with authority to plan for the productivity of a given area of paddy land. Since the introduction of the Agricultural Lands Law No. 42 of 1973, the Cultivation Committees have been reconstituted

¹¹For example see, I.K. Weerawardene, "Lessons of an Experiment : The Paddy Lands Act of 1958", Ministry of Agriculture and Lands, Colombo 1975.

and they now function as Agents of the Agricultural Productivity Committees.

Another piece of agrarian legislation that will affect the rural sector in the Sale of State Lands (Special Provisions) Law No. 43 of 1973. It is a Law to provide for the systematic sale of State Lands in Sri Lanka which had been alienated under the provisions of the Land Development Ordinance No. 19 of 1939. The intention is that the persons now using these lands will take a greater interest in agricultural development if these lands are rendered virtually freeholds and that where necessary it will be possible for them to obtain financial assistance from Banks and lending institutions on the security of the land. It is not possible to evaluate this Law as its implementation has only begun.

The most far-reaching Land Reform Legislation, ever introduced in Sri Lanka, is the Land Reform Law No. 1 of 1972. This was mainly a re-distributive reform. The imposition of a ceiling of 50 acres and 25 acres in the case of paddy lands by any 'person' enabled the government to obtain about 560,000 acres and vest it in the Land Reform Commission. A 'person' was defined broadly as:

- (a) a family consisting of the parents and children under 18 years of age, or
- (b) any individual who is 18 years of age or over.

The Law did not apply to lands owned or held by public companies and religious bodies. The legislation specifically provided that land vested in the Land Reform Commission should be utilised in a manner which will result in an increase in its productivity and in the employment generated from such lands. In this connection it is worth noting the comments made by the ILO Report, "A further big thrust towards labour intensification is needed. If a distributive land reform is enacted now, it could provide that thrust as farmers adapt to the labour using and land exploiting practice associated with small units of production."¹² The lands vested under the LRC in terms of Land Reform Law No. 1 of 1972 have so far been distributed among a variety of government and cooperative organisation as well as among villagers who were in need of small parcels

¹²ILO, Report on Matching Employment towards Expectations: A [Programme of Action for Ceylon", Geneva 1971, p 92.

of land for village expansion and rural housing. On the whole, the land vested in the Commission have not been fragmented and are being managed in relatively large units under different forms of management. Some of the important agencies which have been given land under this programme are the Janawasa Cooperative Settlements managed by the LRC, the State Plantations Corporation and special Cooperative Organisations which have been established at the level of each electorate. It is too early to discern the patterns of land use and management that will emerge on the main corpus of the lands taken under the first Land Reform Programme. There is undoubtedly a great deal of experimentation in trying to evolve new tenural systems, management practices, and methods of operations which would ensure social justice, increased employment, higher productivity and attitudinal changes.

A further step in the restructuring of the agrarian situation in Sri Lanka was taken when legislation was unanimously passed in the National State Assembly to nationalise the estates owned by public companies that had been exempted under the earlier Land Reform Law. Under this Bill which was entitled Land Reform (Amendment) Law of 1975, nearly 415,000 acres of land owned by 87 Sterling Companies and nearly 145 Rupee Companies became vested in the Commission in October 1975. Most of this land is cultivated under tea and rubber. Unlike in the case of the lands vested earlier with the LRC, the land vested in the State under the new Amending Bill is in large holdings and generally comprise better managed and more productive units. At present, three agencies of government, namely, the State Plantations Corporation, Janawasma¹³ and Usawasama¹⁴ manage these estates. It is too early to predict the future development in land use and management of these productive tea and rubber estates. Efforts are being made to maximise levels of production and also agricultural diversification on these estates (milk production is case in point) and also to remove the socio-economic tensions between the estates and the surrounding villages which were generated for a long time under conditions of a dual economy born in the Island's Colonial past.

¹³Literally, the People's Estates Development Board.

¹⁴Literally, Up-Country Cooperative Estates Development Board

The Land Reform Law No. 1 of 1972 was accompanied by another interesting and far-reaching Law known as the Agricultural Productivity Law No. 2 of 1972. In its scope and objective the Law is without a precedent in Sri Lanka. For instance, the concepts of agricultural development embodied in the Land Development Ordinance of 1935 were most rudimentary in comparison to those embodied in the Agricultural Productivity Law. Similarly, the provisions of the Paddy Lands Act of 1958 were confined only to paddy lands. For the first time in the history of Sri Lanka the Agricultural Productivity Law seeks to establish standards of productivity and good management overall agricultural land. This is seemingly simple but in reality a far-reaching change in the objectives of agricultural development. What is now being sought is nothing less than a commitment to the concept of *total land use*. The Law contains several important parts. The first part deals with the farming and management of agricultural land. Part two deals with agricultural productivity committees which are the principal institutions through which the Productivity Law will be implemented. Further details regarding Agricultural Productivity Committee will be given in a subsequent section in this paper. Part three deals with the establishment of Agricultural Tribunals. This is an important feature of the new Law because it establishes at the district level a new institution for determining matters in dispute in agricultural lands. The Agricultural Tribunals are intended to dispose of disputes expeditiously and with the least expense and inconvenience to farmers.

The Policy Frame regarding Supporting Services for Agricultural Productivity

Agricultural Research : The Agricultural Research base in Sri Lanka has been developed over a long period of time. There are three Research Institutes for tea, rubber and coconut. These three institutes which were established a long time ago represent a period when agricultural research was almost synonymous with research connected with these three export oriented crops. Since the 1930s greater attention has been paid to the domestic food crops sector where the research responsibilities are vested almost exclusively with the Department of Agriculture which is under the Ministry of Agriculture and Lands. From the 1930s

to 1960s the primary research emphasis of the Department of Agriculture was on rice.

In enlarging the research activities of the Department of Agriculture, it was necessary to build the new research capabilities in terms of Agro-Climatic Regions and Sub Regions. In this connection it is worth noting that though a small country Sri Lanka has a variety of agro climatic zones where the research findings have to be specific to the region. The principal objective of the research programme has always been to evolve crop varieties and farming systems which are suitable to the country. The most striking success of this policy has been in the Sri Lanka rice breeding programme which has produced a rich range of new high yielding varieties which are adapted to local farming conditions. The escalation in the prices of agricultural inputs which became particularly oppressive after 1972 provided another objective for the agricultural research programme in Sri Lanka—namely, to evolve planting material and farming systems which rely less on imported inputs such as fertiliser and pesticides.

The Land Reform programme inaugurated in 1972 also provided a new policy framework for agricultural research. The traditional emphasis since the 1930s in domestic agriculture had been in the dry zone of Sri Lanka where large extents of State land were available for farming provided irrigation and other supporting facilities could be provided. The lands in the West Zone and the Intermediate Zones of the Island were in private hands or were owned and managed as estates by tea and rubber companies. The Land Reform programme radically altered this situation in that the entire corpus of land vested in the State under the Land Reform programme fell in the Wet and Intermediate Zones of the Island. Agricultural research has, therefore, to contend not only with the development problems of the Dry Zone but also with the potentialities of the Wet and Intermediate Zones for diversified agricultural growth including the cultivation of food crops on a systematic basis.

The policy objectives of agricultural research have also undergone substantial changes in the area of training and education of research personnel. The traditional philosophy of providing training in European and American Universities and Research Institutes is gradually giving way to training within

country and within the Asian region. For instance, the University of Sri Lanka has recently established an Institute for Post Graduate Studies in the agricultural sciences while the Agrarian Research and Training Institute under the Ministry of Agriculture is now undertaking a substantial programme of research and training in socio-economic aspects of agriculture and the agrarian situation in Sri Lanka. The overriding research policy of the Department of Agriculture is to provide solutions to the problems of farmers working on small-holdings where labour intensive rather than capital intensive methods are necessary. It is becoming increasingly evident that the purely crop oriented research of the past must give way to inter-disciplinary research aimed at developing viable systems of farming, which make maximum use of the land and its resources.

The Tea, Rubber and Coconut Research Institutes have also been affected to some extent by the changes that have occurred in the agrarian situation in Sri Lanka during the last 6 years. Even in the case of these traditional plantation crops there is a need to think in terms of agricultural diversification and optimum conditions of land use. The agricultural diversification project which was started in July 1971 for determining alternative forms of land use, that could be successfully introduced on uneconomic tea and rubber lands is proving to be a path finder in diversifying agriculture in areas where marginal tea and rubber lands had existed earlier. Two pilot areas, namely, Nilambe/Atabage catchment consisting of 43,000 acres and Gurugoda/Ritigala Oya catchment of 22,500 acres have already been selected as intensive area development schemes where traditional tea and rubber plantations will form a part of an integrated agricultural development programme. These activities will naturally bring new orientations to the Tea and Rubber Research Institutes. In the case of the Coconut Research Institute, it has been apparent for a long time that most coconut lands cannot provide an adequate income unless other agricultural activities are included as diversification of the coconut lands.

Agricultural Extension: The Tea, Rubber and Coconut Research Institutes provide an extension and advisory service to the estates as well as the small-holders. However, the largest extension service both in terms of personnel and financial investment is provided by the agricultural extension services of

the Department of Agriculture. This extension service which covers crop and animal husbandry activities in the entire Island is organised according to a threetiered organisation structure. The basic grade of extension worker is the village level officer whose minimum educational qualification is a certificate from a practical farm school which provides a one year course of training after the GEC Ordinary Level. The intermediate level of extension worker is the Agricultural Instructor whose minimum educational qualification is a certificate from the Agricultural School which provides a two-year course of training after the GCE Advanced Level. A large number of agricultural instructors are now University graduates. The highest grade in the extension service is the Agricultural Officer (both graduates and non-graduates), who are invariably senior officers with long years of experience in the field. There is one Agricultural Officer for each of the 22 districts in Island while some of the larger districts with a high agricultural potential have more than one Agricultural Officer. On the animal husbandry side there are livestock officers and Veterinary Surgeons stationed in all parts of the Island. The village level extension workers are provided opportunities to enter the agricultural school and obtain the two year Diploma in Agriculture. Similarly, Agricultural Instructors are given opportunities of entering the University and obtaining a Degree in agriculture or a related discipline. The agricultural extension services of the Department of Agriculture is supported by a publicity and propaganda unit and an inservice training school which provides training and refreshes courses on a continuing basis. The extension service is also supported by the agricultural farms of the Department of agriculture which provide planning and breeding material, seed multiplication facilities and facilities for farmer training. The extension officers of the Department of Agriculture are provided liberal avenues of training within and outside the country and more specifically in the countries of the Asian region.

In the context of countries like Sri Lanka the common criterion adopted in the developed countries of judging the efficiency of an extension service by reckoning the number of extension workers for a given number of farmers had no relevance whatsoever. Within the resources available in Sri Lanka the total agricultural extension service is substantial. What is required

is to constantly upgrade its technical competence and operational efficiency. The extension service in Sri Lanka has been built up on the basis that the extension work will be done largely through rural institutions. The institutional approach to agricultural extension is fundamental to agricultural policy in Sri Lanka. There are a larger number of rural institutions which have been established for the purpose of serving agricultural development. The three principal institutions in this field, which will be discussed later in this paper are the agricultural productivity committees, cultivation committees and the cooperative societies. Outside the extension services provided by the Tea, Rubber and Coconut Research Institutes and the Department of Agriculture, a few other institutions provide their own extension services in specific areas, such as the area of authority of the Mahaweli Development Board and the Udawalwe Development Authority and in specific fields such as sugar cane where the Sri Lanka Sugar Corporation has recently started an extension service for rural sugar cane growers. During the past few years the extension service has also developed areas of 'subject matter specialisation' in crops and livestock programmes where specialised attention is considered necessary for the further development of the production programmes. Examples of such subject matter specialisation are to be found in the areas of potato, chillie and soya bean cultivation.

Food Crops as Against Cash Crops: It has already been stated that Sri Lanka is now committed in terms of policy, legislation, monetary and fiscal policies and patterns of financial investments to a comprehensive programme of agricultural diversification based on a rational use of land, man power and other available indigenous resources. This commitment also implies that equal encouragement should be given to food crops as against cash crops. However, this policy may not be easily discernible to a casual observer because the drought conditions of the last five years, the food crisis during the 1972-74 period and the policy of banning a wide range of food imports have all tended to focus public attention on the heavy weight of national policy on the development of food crops. While this may appear to be true to an extent, there has also been unprecedented interest and policy supports in the development of

cash crops which have a good export potential. Evidence of this policy is to be seen principally in the establishment of a Department of Minor Export Crops in 1971 under the Ministry of Plantation Industries. This Department has recently been transferred to the Ministry of Agriculture and Lands. The Department was established with the objective of promoting the cultivation and processing of perennial crops with export potential. Tea, Rubber and Coconut were excluded from the purview of this new department. The Department of Minor Export Crops has been dealing with beverages and edible nuts such as cocoa and coffee, spices and essential oils such as pepper, cloves, nutmeg, cardamon, cinnamon and cashew and agro-industrial crops such as Mulberry (for sericulture), papaw (for papaine production), citronella, lemon grass, oil palm and cinchona. These crops received virtually no attention in the past except for a programme of cocoa rehabilitation. These crops have been traditionally grown in mixed gardens on small-holdings. The systematic development of these crops could considerably enhance rural incomes and generate further employment. There is also very strict quality control exercised by the Bureau of Sri Lanka Standards in regard to export of these commodities. Both local and foreign trade is handled by the private sector and two State agencies, namely, the Sri Lanka Marketing Federation and the Sri Lanka State Trading Consolidated Exports Corporation.

Government policy does not discriminate between food crops and cash crops. The former has received more publicity and even more headway in spite of the drought conditions of the last five years. The latter is harder to develop, involves the development of export markets in processed and unprocessed forms and is emerging from its condition of near total neglect in the past. The policy perspective that must be recorded in this connection is that the encouragement of food crops as against cash crops will be determined by certain conditions which are fundamental to agricultural policy planning in Sri Lanka, namely, appropriate land use, maximising employment and generation of income in broad sectors of society.

Fertiliser: The use of artificial fertiliser has been promoted in Sri Lanka over a long period of time. The well-managed Tea, Rubber and Coconut Estates which have been referred to

as 'a modern sector within a traditional rural economy', realised the great advantages in the proper application of fertiliser and utilised these techniques as a part of sophisticated system of management. However, in the non-plantation sector the use of fertiliser had to be advocated and built up over a long period of time. A variety of strategies were adopted to persuade the rural farmers to use artificial fertilisers in the correct proportions and at the correct times. The Department of Agriculture has conducted trials and experiments regarding fertiliser use for several decades. As a result of this work which has been matched by detailed work on soils, there is available today a sophisticated body of knowledge on the use of fertiliser in all aspects. Agricultural extension services have continuously pushed this body of knowledge towards the farmers in appropriate ways. At the same time major investments were made in providing storage for fertiliser at the district, divisional and village levels. The subject of fertiliser had become important enough in Sri Lanka in 1963-65 to establish under the Ministry of Agriculture, a separate State Corporation—The Ceylon Fertilizer Corporation, to handle the import and bulk distribution of artificial fertilisers in Sri Lanka. This was clearly an indication that the government was wanting to establish some control and authority over a product which had earlier been left entirely to private business enterprise. The Ceylon Fertiliser Corporation quickly moved towards establishing its channels of imports, a large storage complex near Colombo and a mixing plant of its own. It should be mentioned here that the decision to supply mixed fertiliser for certain crops including Paddy, was a major technological advance in ensuring that the rural farmer applied fertiliser in the correct proportions. The other strategy used for popularising the use of fertiliser was the principle of subsidisation. The level of the fertiliser subsidy has varied from time to time. However, the principle of subsidisation was applied for a long time on a selective basis. This entailed that certain crops such as Paddy received a fertiliser subsidy which was sometimes as high as fifty per cent. In the case of Tea, Rubber and Coconut the fertiliser subsidy was available for many years to small-holders. In essence the policy of subsidising fertiliser was irrational in that there was a subsidised sector and an unsubsidised sector. A plethora of regulations, forms

and procedures were maintained for a long time to ensure that subsidised fertiliser did not 'leak' into the unsubsidised sector. This was, however, a bureaucratic fiction. Subsidised fertiliser was freely moved to the unsubsidised sector. Recently the Government decided that fertiliser for all crops should be subsidised and at 50 per cent. The product is to be made freely available through State agencies and registered private traders to be sold 'across the counter'.

These developments regarding fertiliser policy were indeed encouraging until the grave shortage of fertilisers and severe escalation in prices that took place during the period 1973-75. Fertiliser was no longer a cheap product and its application and value had to be assessed in careful economic terms. Sri Lanka played an important and even decisive role in handling the international fertiliser crisis that developed during the period 1973-75. As a member of the FAO Council, the Sri Lanka delegation took a leading interest in persuading the FAO Council to establish a separate commission of fertilisers. This commission is continuing to do very useful work. Subsequently the Sri Lanka Prime Minister proposed the establishment of an International Fertiliser Fund. This proposal was taken up at the World Food Conference in November 1974 and the Sri Lanka delegation played an active role in formulating and obtaining a consensus on the resolution regarding fertiliser passed by the World Food Conference. Sri Lanka stands committed to the ingredients of the resolution regarding fertiliser passed by the World Food Conference. The essence of this commitment is that fertiliser is a basic input in agriculture particularly for countries which depend on imported fertilisers and that a product vital for agricultural development should be brought under social and where necessary international monitoring and cannot be left entirely to the vagaries of market forces whether local or international. The fertiliser policies of the Sri Lanka Government have been consistent with her stand at international forum.

The fertiliser crisis of the recent past has driven home a major policy objective to the planning authorities in Sri Lanka. Developing countries like Sri Lanka cannot place unlimited faith in inorganic fertilisers which have to be imported. The philosophy of popularising the use of inorganic fertilisers

requires some rethinking. The use of organic fertilisers as farmyard manures have been largely neglected in Sri Lanka except in special areas like Jaffna, where intensive and cost conscious farming has been established over a long period of time. The virtually blind adherence to the use of artificial fertiliser must be tempered with the realisation that some use of organic fertilisers which are locally available will strengthen the indigenous farming system while reducing its dependance on foreign markets. While Sri Lanka has realised this lesson it has still to take practical steps towards evolving a policy that gives the required emphasis to organic fertilisers as against imported artificial fertilisers. Sri Lanka is taking steps to establish a urea factory based on Naphtha. Substantial deposits of Apatite have also been found in the dry zone district of Anuradhapura. In a few years time it is expected that there will be no basic need to import the Nitrogen or the Phosphate fertilisers. Nevertheless, the lessons of the recent fertiliser crisis will remain fundamental to Sri Lanka's policy thinking on this subject, namely, an economically advantageous compromise between the use of organic and inorganic fertiliser. In the field analysis, this is not a mere technical question regarding fertiliser use, whether organic or inorganic; it is dependent on the development of a farming system where locally available organic manures can be channelled profitably in the production process. This involves a variety of policy considerations in which the integration of crop and livestock husbandry is a necessary prerequisite. Sri Lanka is now exploring this path.

Agricultural Credit : There has been a long-standing policy commitment that agricultural credit is an indispensable requirement for the farming community and that the State should shoulder the major responsibility in this matter. Even though this policy commitment is several decades old, it operated on an effective scale only for the plantation sector and the Agency Houses and Brokering firms which managed the commercial and marketing activities of the post colonial plantation sector. The credit needs of the smallholder in the domestic sector were met largely through non-institutional sources (e.g., money-lenders) and to a marginal extent through Government supported Co-operative Institutions.

The Bank of Ceylon (a premier national bank) and several

British owned commercial banks served the credit needs of the larger individually and company owned estates. The small holders of Tea, Rubber and Coconut were given some financial assistance, (*e.g.*, for replanting) by the Government. But the bulk of the rural agricultural economy had no worthwhile credit supports from the Government until the 1960s. This imbalance between the modernised institutional support in financial matters to the well organised plantation sector and the relative lack of institutionalised financial support for the smallholders and the domestic food production sector is yet another indication of the policy preferences in the colonial and post-colonial era when the export of a few primary commodities and import of nearly all consumer goods including food was the guiding philosophy. The change of policy towards the grant of credit on a large and organised scale was a direct consequence of the realisation that the nation could not rely exclusively on the traditional plantation sector when foreign exchange earnings were dwindling and pressures of population growth were building up major economic and social tension within the country. Broadly speaking, the grant of agricultural credit to the non-plantation sector on an organised basis by the State is only about a decade old.

The principal agency through which the Government started channelling agricultural credit was the People's Bank which was started in 1962. The credit was granted and recovered through the network of cooperatives on the basis of loan limits prescribed by the Government. The Central Bank gave a 75 per cent guarantee on agricultural credit granted by the People's Bank under Government approved schemes of lending. The bulk of the agricultural credit was given for paddy cultivation but over the year credit schemes have been extended to cover about fourteen other important agricultural crops. The approved credit schemes operated through the People's Bank and through the Cooperatives carried certain structural defects which have persisted to this day in spite of repeated efforts to overcome them. The Cooperatives have never been given the right to determine the credit worthiness of a borrower. They were only institutions for channelling credit and recovery it as far as possible. Similarly, the People's Bank lent monies to the Cooperatives in accordance with the approved schemes and had no direct relationship

with the borrower. There has been little or no supervision over the utilisation of the credit that was granted for purposes of agricultural production. There was no organisational link-up between the lending agencies and the agricultural extension service. Under these conditions it was difficult to assess the quantum of credit that was applied to productive purposes. In recent years efforts have been made to tighten these short term production loans by granting agricultural inputs where possible, such as seed and fertiliser in kind rather than in cash. In addition to the inherent structural defects of the government authorised credit schemes operated through the People's Bank and the Co-operatives, there has been a marked national failing in the repayment of credit even when there has been no crop failure. Agricultural credit granted by the government is considered a subsidy and welfare measure. This general attitude by the rural community has been strengthened by the manner in which overdue loans have been written off from time to time and loan defaulters made eligible under new loan schemes. For instance under a new loan scheme introduced in 1978, the volume of credit reached the figure of Rs. 73 million as against Rs. 28 million granted in 1976. By 1970-72 the number eligible for new loans had dwindled to a very small number and the government has been making concessions from time to time to enable loan defaulting farmers to be eligible for fresh loans. The ILO report summed up this situation in the following terms:

"Ceylon has several times repeated an unfortunate rural credit sequence. Funds are loaned on a generous scale to cover production costs, without supervision. They often do not yield the output to cover repayment, because they finance inappropriate techniques—or even consumer needs, weddings or payments to village money lenders. Some borrowers are promised rescheduling as a political gesture, and so they delay repayments. Local Cooperative Credit Societies then default on their own debts (under the current scheme through the People's Bank) and become defunct, so that not only defaulting farmers but also their innocent neighbours are unable to borrow. Credit dries up, fertiliser and pesticide off-take falters and the innocents decide that they too might as well default next time. The government winds up the

scheme, then starts a new one, and the cycle begins again."¹⁵

Many years ago agricultural production credit was channelled through the Department of Agrarian Services which functioned under the Ministry of Agriculture. Even during this period the incidence of loan default was high and the re-scheduling of loans and write offs were frequent. A decision was taken in the 1960s to transfer the functions of managing government approved agricultural credit schemes from the Department of Agrarian Services to the People's Bank. This was done in the hope that a commercial bank would be able to lend and recover agricultural credit more effectively than a department of government and that monies given out through a commercial bank would not appear to be government subsidy. These hopes have however not been fulfilled.

In 1974 the government decided to bring the Bank of Ceylon also into the field of agricultural credit for small farmers. The system of lending was to be basically different from that adopted by the People's Bank. The Bank of Ceylon was to grant agricultural credit on the basis of lending limits for different crops specified by the Ministry of Agriculture directly to the borrowers. The scheme was to be operated through branches of the Bank of Ceylon established at the Agricultural Service Centres which were really extension centres constructed for the functioning of Agricultural Productivity Committees which were new Institutions established under the Agricultural Productivity Law No. 2 of 1972. The Bank was to work in close collaboration with the Agricultural Productivity Committee and the Extension Officers of the area in the grant and recovery of agricultural credit. The entry of the Bank of Ceylon into the area of rural credit has been received enthusiastically. It is rather premature to make an assessment of the efficiency with which the Bank of Ceylon will manage agricultural credit in the rural areas. But there are indications that the Bank of Ceylon is also facing difficulties in effecting recoveries. This is partly due to the severe drought conditions that have adversely affected many parts of Sri Lanka during the last five years.

During the period 1967-68 and 1975-76 the People's Bank had given out approximately Rs. 496 million for paddy cultivation

¹⁵ILO Geneva 1971, Matching Employment Opportunities and Expectations. A Programme of Action for Ceylon, p. 98, para 331.

and recovered approximately Rs. 268 million. The approximate percentage of recovery being 54. During the same period the People's Bank had lent approximately Rs. 92 million for other field crops and recovered approximately Rs. 54 million the approximate percentage of recovery being 58. During the period 1973-74 to 1975-76 the Bank of Ceylon had lent approximately Rs. 20 million for Paddy Cultivation and recovered approximately Rs. 7 million. The approximate percentage of recovery being 34. In the years 1974 and 1975, the Bank of Ceylon had lent approximately Rs. 10 million for other field crops and recovered approximately Rs. 1 million.

In addition to the agricultural credit granted by the People's Bank and the Bank of Ceylon under approved schemes of lending, both banks operate agricultural credit schemes where the borrowers have to provide adequate security. In the case of loans of this nature which are granted according to the criteria of commercial banking the incidence of default is negligible.

The system of agricultural credit that is at present operated in Sri Lanka is basically the grant of short-term production credit with little or no security on the basis of a selected range of crops and agricultural activities, which the government has decided to sponsor. The grant of agricultural credit on a crop-wise basis is not particularly conducive to the development of a diversified farming system. Unfortunately it has not been possible to introduce improvements in the credit system until the practice of large scale loan defaulting can be corrected. The problem has been aggravated in recent years by the drought conditions which have affected the entire agricultural sector. The development of a reliable agricultural credit system remains an unsolved problem for policy makers and planners. Even today the bulk of the agricultural credit in Sri Lanka remains non-institutional.

Agricultural Marketing Including Pricing of Agricultural Products: For nearly two decades the government's pricing policies for agricultural produce were implemented within the framework of the Agricultural Products (Guaranteed Price and Control of Hulling and Milling) Act No. 33 of 1961 as amended in 1964. Under this Act there was a schedule of agricultural products and guaranteed prices offered by the government.

The prices were fixed from time to time on the recommendations of an advisory committee of officials. The Act was administered by the Department of Agrarian Services and the purchasing of agricultural products was done through the network of Cooperatives as well as through purchasing points directly managed by the Department of Agrarian Services. The government has always accepted price support as a part of agricultural policy because it was a necessary inducement for increasing production and a means of stabilising farm incomes. The producers were always free to sell their produce in the open market.

After 1970, there has been a radical change in the pricing policies of the government with regard to agricultural products. The ban on the import of a large range of imported food items had the immediate effect of increasing the prices of nearly all the locally grown food items, such as potatoes, chillies, onions, maize, sorghum, green gram and yams. In some instances the prices rose as much as 300 per cent. The sharp increase in the prices of food items caused some hardships to the urban consumers. Nevertheless, the government stood by its policies of banning imports and passing on the benefits of the enhanced prices to the producers. In this situation, the guaranteed price scheme was no longer relevant or workable and in September 1973, the government decided to repeal the Agricultural Products Act No. 33 of 1961 and to allow a free market in all the agricultural products other than paddy.

The Paddy Marketing Board was established in March 1971 and took over the functions of paddy purchasing and milling which were earlier supervised by the Department of Agrarian Services. The Paddy Marketing Board with the Cooperatives as its agents purchased paddy in all parts of the Island in competition with the private trade. As a result of substantially decreased paddy production in 1972 and the need to maximise government purchases to supply the rationing scheme, in February 1972 the Paddy Marketing Board was vested with monopoly powers of paddy purchasing. Under this order, the purchase of paddy and rice by anyone other than the Paddy Marketing Board and its authorised agents was declared illegal. The farmers, however, were not compelled to sell their produce to the government. They could retain the produce without sale

if they so desired. At present the government pays Rs. 33 for a bushel of paddy.¹⁶ Since November 1975 all restrictions regarding the sale and transport of paddy and rice have been removed and the Paddy Marketing Board purchases paddy for the government in competition with the private trade.

The present situation regarding agricultural marketing is, therefore, one which can be described as a complete free market where price is determined by supply and demand. The government provides a floor price for paddy, maize and sorghum which is purchased by the Paddy Marketing Board. The National Milk Board purchases a large quantity of milk (at present about 300,000 pints a day), at fixed prices through collection centres and dairy cooperatives. The Department of Marketing under the Ministry of Foreign and Internal Trade is concerned with marketing of vegetables and fruit in competition with the private trade. While the Cooperative Marketing Federation and Consolidated Exports handle fair quantities of minor export crops. Other than these few government institutions the marketing of agricultural products is largely in the hands of the private traders. After the nationalisation of estates, the State Plantations Corporation of Janawasama which are managing the bulk of the estates have been attempting to stabilise their own marketing systems without going through the former agency and brokering houses.

Agricultural Insurance: Sri Lanka introduced a scheme of Crop Insurance for paddy as far back as 1958. The object of this pilot project was to protect the farmer from financial disaster in times of crop failure, make him more credit worthy and encourage him to adopt improved farming practices. The pilot project which was started with a coverage of 28,000 acres in five districts was extended to 200,000 acres in 16 districts by 1965. Further expansion was suspended pending remedial measures on a variety of shortcomings that had emerged in the operation of the scheme. The main problem was the high rate of indemnity payments in relation to a low rate of premia collection. During the period 1958-59 to 1973, the total indemnities paid amounted to Rs. 15.9 million whereas premia

¹⁶When husked and milled for rice, a bushel of paddy will generally yield about 25 pounds of rice.

collected was only Rs. 6.4 million. With the changes that have been introduced in the agrarian sector in recent years, it was considered necessary to make a fresh start in the field of insurance as well. New legislation was passed and an Agricultural Insurance Board was set up under the Agricultural Insurance Law No. 27 of 1973. Initially, the insurance scheme has been introduced for paddy cultivation on a compulsory and all-island basis. Variable premia and variable indemnities depending on the risk factors in a given area have been introduced. The Agricultural Productivity Committees and Cultivation Committees act as local agents for the Agricultural Insurance Board. There has been some success so far but the period of operation of the scheme is too short for any serious evaluation.

ACTION PROGRAMMES

Against the background of the government policies and strategies in agricultural development that has so far been discussed, an account is given below of four action programmes which are being implemented in the agricultural sector. These should be treated only as illustrative examples.

Annual Implementation Programme

During the last about nine years the Ministry of Agriculture and Food and subsequently the Ministry of Agriculture and Lands, has established the practice of preparing a Plan each year for the two agricultural seasons of the year ahead. This is essentially a production programme. It sets out targets of acreages, expected yields and estimates of agricultural inputs such as fertiliser, that will be required for the programme. This Implementation Programme is prepared in advance of the seasons and on the assumption that normal weather conditions would prevail. Subsequently, the programme is reviewed at periodic intervals and the targets and expected yields adjusted in relation to conditions prevailing in different parts of the island.

The method of preparation of this annual programme is based on the full participation of the Cultivation Committees and more recently of the APCC and the administrative and technical staff working in the field. Certain guidelines regarding

the preparation of the programme are set out by the Ministry of Agriculture and Lands to each district. At the same time discussions commence at the level of the Cultivation Committee and the Productivity Committee to formulate their own proposals for the next crop year. Thereafter the officials from the 'centre' and the officials and farmers' representatives at the district and divisional levels meet and finalise the programme. At a conservative estimate, the members participating in these discussions throughout the Island would be over 50,000. The programme is prepared at four levels, the national, district, divisional and village and covers both crop and animal husbandry. The Annual Implementation Programme and its method of preparation is now well-known and it has stabilised as a regular action programme covering the principal food production sectors.¹⁷

Mahaweli Development Project

By far the most ambitious development project ever undertaken in Sri Lanka, the Mahaweli Development Project, is designed to divert the waters of the Mahaweli river to provide irrigation facilities to approximately 900,000 acres and generate 80MW of power. Out of the extent to be irrigated, 240,000 acres, which are already under cultivation will receive supplementary irrigation to allow for double cropping while the balance will be newly developed lands. The total programme is a long-term one consisting of three phases sub-divided into several projects and stages. Work was started in 1970 and in Stage I approximately 124,000 acres of land will receive supplementary irrigation. This will eliminate one of the major hazards facing farmers in several colonisation schemes in traditional villages. In Stage II around 71,000 acres of new land in the north-central and north-western provinces will be brought under cultivation. Irrigation facilities will enable the cultivation of a variety of food crops all round the year. About 23,500 new farm families will be settled in this area between now and 1980. These families will be provided with 3 acres

¹⁷For a detailed discussion of the relevance of the Annual Implementation Programme, its method of preparation, and the manner in which it has evolved over the years, see Draft Agricultural Development Plan 1971-77, Perspectives and Implementation Policies.

of irrigated land and $\frac{1}{2}$ acre of homestead with civic amenities which could help to build up a village community.

In addition to the large engineering aspects of the project, detailed socio-economic studies have been carried out in an effort to carefully plan the agricultural development and settlement aspects of the project area.

The Mahaweli Project is also a multipurpose project aimed at hydro-power development. The power so generated will be utilised for agriculture and industry as well as for domestic supplies both within and outside the project area.

Collective Settlements or Janawasas on Land Reform Lands

The Land Reform Commission decided that Janawasas or correlative forms of settlements should be established on some of the lands that have been vested in the Commission. In taking this decision the commission was guided by several considerations. Many of the estates, particularly those with tea and rubber could not be run efficiently as small holdings. It was felt that an effort should be made to develop collective forms of agriculture where the settlers have an ideological commitment to this type of farming and are willing to build up the organisation on the principles of self-reliance and self-management. In some of the coconut lands vested with the Commission, it was felt that the land capabilities varied widely even within small geographical areas. As such, if the land was alienated as individual holdings, there would be great disparities in the levels of productivity and income that different small holdings would have even within a relatively small area. In the case of such land, the establishment of a collective farm would ensure that the potentially good parts of the land and the marginal areas could provide an adequate level of income if the management was under a collective form of organisation. The extent of land under a Janawasa varies considerably but on the average about 250-300 acres would come under a single Janawasa.

In selecting settlers for the Janawasas priority was given to citizen workers on the estates. Non-citizen workers were allowed to remain as labourers employed by the Cooperative. Other members were selected from nearby villages on the basis of need, background and ideological commitments.

In a Janawasa the entire land belongs collectively to the members. Each Janawasa is managed by a Committee of Management of the settlers themselves. The general direction and development programmes of Janawasa are supervised at present by the Settlement Planning Division of the L.R.C. The immediate financial requirements are advanced as loans from the Commission while finances required for development purposes is obtained from the People's Bank. The members of the settlement form work groups with elected leaders for day-to-day production and management. Initially, a daily subsistence allowance is paid to members at a rate not less than the government approved wage. The profits will be distributed according to the bye-laws of the Cooperative as soon as the financial position allows it. Several Janawasas have in fact done so already.

Special attention is being paid to problems of integrating Janawasa settlements with the neighbourhood. Local village institutions are involved in planning the settlement from its very inception. The APCC and MPCC are involved in the administration and guidance through representation on the Executive Committee. The integration with the neighbourhood is promoted by such activities as joint Shramadana. The intention is that the settlement should become a new village and not an estate. There are regular and continuing training and orientation programmes for officers and members of the Janawasas.

At present there are about 170 Janawasas covering approximately 50,000 acres of land and providing employment to about 7,000 men and over 5,000 women. In addition, about 5,000 are employed in Janawasas as labourers. There is potential for increasing employment for about 2,000 more persons on the Janawasa which have been established. The production activities of Janawasa cover a wide range of crops, livestock and even small industries such as Jaggery making.

Separate legislation known as the Janawasa Law has been tabled before the National State Assembly and is expected to be taken up for discussion within a few weeks time. In terms of the proposed Janawasa Law there will be a separate Janawasa Commission, and a very high degree of autonomy for the members of the Janawasa to manage their own affairs.

The Law enables groups of farmers working in a given area to apply for registration as Janawasa if they are willing to conform to the objectives and rules of the Janawasa Law and the Janawasa Commission.

The Janawasa settlements are admittedly an experiment in settlement planning in Sri Lanka. It has combined the resources of land and people at minimum capital cost. For instance, the average cost of one settler on these schemes would be a few hundred rupees compared to nearly fifteen to twenty thousand rupees spent on settling a colonist in the dry zone irrigation schemes during the 1950s. The idea of the Janawasa and the methods adopted so far in fostering them are bold and innovative. A great deal of work remains to be done if the Janawasas are to emerge as a new organisational form in settlement planning in Sri Lanka.

Divisional Development Council Projects

The objectives of Divisional Development Council Projects have been expressed in the following terms: "...bring together people's representatives and government officials for the common task of regional development... The councils are expected to examine the land and natural resources, raw materials available locally and to devise projects which will provide employment opportunities for the people... in other words, the Development Councils are given an opportunity of producing miniature plans for their areas . . ."

The DDC Projects were intended to provide new employment speedily and at minimum capital cost. The programme has so far been directed by the Ministry of Planning and Economic Affairs with considerable support from the District Administration and special planning officers appointed by the Ministry of Planning. DDC Projects cover a wide range of agricultural, industrial and other activities. In the case of agricultural projects, they cover a wide range of crops and some animal husbandry projects including poultry. Either State land or private land acquired for the purpose were used for opening DDC farms which varied from 25-100 acres in extent. The funds for the projects were obtained from a government grant of Rs. 1,600 per acre, deposits in Cooperative Societies, loans from Commercial Banks and share capital contribution by mem-

bers. At present it is not possible to give a clear idea of the income levels in this wide range of DDC projects. As at March 1975 the overall position of this programme is reflected in the figures given below:

<i>Type of Project</i>	<i>No. approved</i>	<i>Operating</i>	<i>Target of Employment</i>	<i>Actual Employment</i>
Agricultural	698	499	15,651	10,409
Industrial	887	469	14,713	8,059
Others	88	16	1,292	304
Total	1,673	984	31,656	18,772

ADMINISTRATIVE SYSTEMS

A large number of State agencies are involved in activities pertaining to agricultural development in Sri Lanka. The Ministry of Planning and Economic Affairs is concerned with an overall view of the sector and particularly its foreign exchange needs. The Ministry of Irrigation, Power and Highways is directly responsible for the infrastructure facilities and especially irrigation. The large Mahaweli Development Scheme and the Uda Walawe Development Authority are under the Ministry of Irrigation. However, representatives of the Ministry of Agriculture and Lands work alongside Irrigation Ministry officials in the implementation of these schemes. The Ministry of Plantation Industries was first established by the present government to look after the problems of the plantation sector principally of tea, rubber and coconut. With the land reforms programme and the nationalisation of estates the situation regarding ownership and management of tea, rubber and coconut lands has changed a great deal. The State Plantations Corporation under the Ministry of Plantation Industries is responsible for the management of a large extent of tea and rubber estates. The LRC., the Janawasama¹⁸ and the Usawasama¹⁹ which are under the Ministry of Agriculture and Lands are also responsible for

¹⁸Literally, the People's Estates Development Board.

¹⁹Literally, Up Country Estates Development Board.

the management of a large number of tea and rubber estates. Some special cooperatives formed at the electoral level have also been handed over some of the tea, rubber and coconut estates which come under the land reform programme. The Tea, Rubber and Coconut Research Institutes function under the Ministry of Plantation Industries which is also responsible for the Agricultural Diversification Project (diversification of agriculture of uneconomic tea and rubber lands), and the development of sericulture and cashew. The subject of fisheries is under a separate Ministry and the fisheries programmes have not been taken into account in this paper.

The Ministry of Agriculture and Lands is vested with the responsibility for all domestic food crops including sugar cane and the area of forestry. Some of the important Departments and Corporations under the Ministry of Agriculture and Lands and involved in agricultural development work are discussed below.

Department of Agriculture

The objective of this Department is largely the development of the food crops sector and animal husbandry. The Department has its Head Office at Peradeniya near Kandy and maintains research, extension and training centres in all parts of the country.

Rural Institutions and Productivity Laws Division of the Ministry of Agriculture and Lands (formerly Agrarian Services Department)

This Division of the Ministry is responsible for the implementation of the Agricultural Productivity Law No. 2 of 1972 and the Agricultural Lands Law No. 42 of 1973. It is also responsible for guiding and developing Cultivation Committees and Agricultural Productivity Committees. The Division is headed by a Director who is a senior member of the Sri Lanka Administrative Service and is assisted by deputies and assistants at the Head Office in Colombo and in the districts. Most of the senior officers in the Division are drawn from the Sri Lanka Administrative Service. This division works in close collaboration with the Agricultural Extension Service of the Department of Agriculture.

Land Reforms Commission

The LRC was established in 1972 as a Statutory Body in terms of the Land Reform Law NO. 1 of 1972. The Commission functions through District and Reform Authorities and is also responsible for the direct management of some estates and the Janawasa settlement programmes.

Land Commissioner's Department

This Department is vested with the overall administration, protection, alienation and sale of State lands in the island. The principal Ordinances relevant to land administration are the Land Development Ordinance No. 19 of 1935; Land Development Act No. 16 of 1969; The Crown Lands Ordinance No. 8 of 1947 and the Sale of State Lands Law No. 43 of 1973. The Department undertakes different types of land development schemes such as colonisation schemes. It has several schemes of financial and technical assistance to colonists and those to whom land is alienated.

Janawasama (People's Estates Development Board)

A Statutory Corporation which has been established recently for managing a part of the estates that come under the nationalisation programme.

The Agrarian Research and Training Institute

The ARTI is a Statutory Board set up by an Act of Parliament to undertake and coordinate research and socio-economic and institutional aspects relating to agricultural development and to provide training at all levels in its areas of concern.

The Ceylon Fertiliser Corporation

This Corporation now holds the monopoly for the importation of all fertilisers to the island. It is also responsible for bulk distribution to private organisations and the cooperatives. The Corporation maintains a large storage complex in Colombo and a mixing plant.

The National Milk Board

This is a Statutory Corporation responsible for the collection, processing and sale of milk and milk products in the

island. The Milk Board is one of the institutions responsible for dairy development in the country and works in close association with the Department of Agriculture.

Paddy Marketing Board

The PMB established in 1971 under the PMB Act No. 14 of 1971 to function as the sole authority for procuring and marketing paddy produced in the island. Recently, the government has allowed a free market in paddy and rice and the PMB now purchases paddy from the farmers at the Guaranteed price of Rs. 35 per bushel in competition with the private trade. The Board has also responsibility for improving the quality of milled rice and is establishing several rice mills in the island.

Sri Lanka Sugar Corporation

The Sri Lanka Sugar Corporation is responsible for developing the sugar can plantations in Hingurana and Kantalai and maintaining the factories for the production of refined sugar. Recently, the Corporation has also entered the area of rural sugar cane cultivation and the development of sugar substitutes and by-products.

The Department of Minor Export Crops

Reference has already been made to the principal activities of the Department.

The above discussion will give a brief overview of the principal agencies and organisations involved in agricultural development in Sri Lanka. However, a special reference must be made to the District Administration because the implementation of most development programmes are on a district basis. There are 22 Administrative Districts in the island, and these further divided into Divisions. The District administration is headed by a Government Agent (generally a relatively senior member of the Sri Lanka Administrative Services), while at the divisional level there is an Assistant Government Agent or a Divisional Revenue Officer. Nearly all the development Ministries utilise the services of the district administration in the implementation of their programmes.

In 1973 the government took a further step in strengthening

the district administration by creating a District Political Authority and de-centralising the financial provisions in the annual budget so that considerable decision-making powers, political, financial and administrative are now vested in the districts.

The Ministry of Agriculture and Lands has built up its machinery for agricultural planning and monitoring around the preparation and subsequent evaluation of the Annual Implementation Programme. At the central level very considerable interministerial discussions are held on specific policy issues that arise either in the preparation of this Annual Programme or in its implementation thereafter. For instance, the price of poonac which is a key factor in animal food and therefore of the Dairy Development Programme has to be settled in consultation with the Ministry of Plantation Industries and the Coconut Cultivation Board because that Ministry is responsible for the export of copra and coconut oil. Other than these interministerial meetings which take place at the centre, there are Working Groups with inter-agency representation monitoring important areas of the agricultural programme. For instance, there is a working group on fertiliser and another on Agrochemicals.

Efforts have also been made to manage intensive development programmes in small areas on an inter-agency basis. For instance, a comprehensive development programme was started in the Devahuwa colonisation scheme in 1970. This was done in collaboration with the Japanese Government. The ingredients of the programme were the rehabilitation of irrigation facilities, increasing productivity on paddy lands, diversification of agriculture on the highlands, consolidation of holdings into viable units, the introduction of selective mechanisation and the improvement of institutions and supporting services of the colony for a better living programme. The initiation in this project was taken by the Ministry of Agriculture and Lands through the Department of Land Commissioner. The Ministry of Irrigation, the Department of Cooperatives, the Department of Agriculture and the Rural Institutions Division participated in the management of this project which has now been completed.

Similarly, the APC in Beminiwatte in the Kegalle District

has been selected by the ARTI in 1973 to serve as an area for detailed socio-economic field investigations which will provide useful insights in agricultural planning in similar areas. Here too, the programme is both an inter-disciplinary and an inter-agency one where the APC of the area and a large number of other government agencies are participating within the framework of an agreed programme.

The structure of the inter-ministry and inter-agency system of consultations for the preparation and implementation of agricultural programmes are now fairly well established. In the districts, the coordinator invariably is the Political Authority and the Government Agent or his representative. At the divisional level every effort is being made now to utilise the APC and the Agricultural Service Centre as the coordinating point for development programmes.

The data base for agriculture policy planning is still inadequate in Sri Lanka. It is well developed and well managed in the traditional plantation sector but in the domestic sector the base is satisfactory for paddy cultivation and rudimentary in regard to other crops which are still grown largely under chena conditions. The improvement of the data base for field crops other than paddy will take time and will have to be developed by utilising the services of APCC and Cultivation Committees which have an intimate knowledge of local conditions.

INSTITUTIONAL INFRASTRUCTURE

One of the most significant developments in Sri Lanka is that the banking system has been taken to the rural areas in a way that almost every rural person has the services of a Bank within walking or 'cycling' distance.

The Cooperatives have been involved in agricultural development work for a long time. However, their performance has tended to be uneven. In areas where the majority of members of a cooperative are directly or indirectly involved in agriculture, the cooperative has also functioned effectively in providing the agricultural inputs, purchasing farm produce and generally assisting the agricultural programmes in the area. On the other hand, where the members of a cooperative are not principally concerned with agricultural matters, the interest in the cooperative has been restricted to the procurement of

rations and consumer articles.

The Government and particularly the Ministry of Agriculture and Lands have been emphasizing the need to develop farmers organisations for agricultural work and for the decentralisation of managerial functions to these organisations. The area of authority of an APC is a Village Council and about 490 such committees will be set up in the country. A good Agricultural Service Centre building with a branch of the Bank of Ceylon is generally available in most parts of the country for these committees to function. The Agricultural Services Centre provides room for extension officers to work and meet farmers of the area. The members of these Agricultural Committees are generally people with an agricultural or managerial background and are appointed by the Minister of Agriculture and Lands for a specified period of time. The Agricultural Productivity Committees are now engaged in assisting in the preparation and implementation of the annual agricultural programmes, supplying seed, fertiliser and planting materials, functioning as agencies of the Agricultural Insurance Board for agricultural insurance work, and attending to the important problems of land and water management within respective areas.

It is still too early to predict the role that Agricultural Productivity Committees and Cultivation Committees will play in the future. At present the performance of these committees has been uneven depending on a variety of organisational and personal factors.

CONCLUSION

This paper has sought to draw attention to the following important features of Sri Lanka experience, particularly as it has developed during the last ten years.

- (a) An extensive range of policy decisions have been taken to create the best possible environment for developing a viable and diversified agricultural system.
- (b) The governments have shown willingness to invest large financial resources in agriculture and rural development.
- (c) The bias towards urban development at the expense

of the rural areas which has occurred in some countries has been absent in the case of Sri Lanka.

- (d) Agricultural policy planning in Sri Lanka has given full emphasis to the fact that the agricultural sector will have to provide meaningful avenues of employment to substantial numbers of the unemployed population. While this may not be the total answer to the problem of unemployment, the agricultural sector has a substantial contribution to make in this direction.
- (e) The administrative and institutional infrastructure for sound and diversified agricultural development is now available in Sri Lanka. What is required is a continuing improvement in the interlocking collaboration of the different parts of this institutional system.
- (f) The facilities for training both technical and managerial skills for agricultural development have been built up within the country to a considerable extent.

It is not unreasonable to assume that all these relative advantages of the agricultural situation in Sri Lanka should have paid handsome dividends in terms of productivity if the successive droughts of the last four to five years had not blunted some of the important production programmes. This perhaps highlights the most important fact, that in Sri Lanka as in some other Asian countries, greater investment is needed on water stabilisation. This would include not only the utilisation of new sources of water but also the proper conservation and management of the water already available.



Discussion Notes



B. Venkatappiah

Indian Agriculture : Priorities, Programmes and Interfaces

Indian agriculture has passed through many vicissitudes during the last quarter of a century. Some, but not all of these, were the result of set objectives or deliberate policy. New conditions arose necessitating change in aim or alteration in emphasis. The monsoons continued to be a major factor; but lessons were learnt a fresh from rains that failed or drought that recurred. Research was translated into inputs and experience into institutions. The greatest need was to produce more. Several programmes and a sizable number of institutions were geared to this objective. The poor and the vulnerable formed the major part of the population. Most of them lived in villages and many were farmers themselves. An increase in production, however large, was therefore not enough in itself. Attempts had to be made to ensure a fair share for all through the mechanism of pricing and distribution. Moreover, the small farmer, the marginal farmer and the one who had to eke out a living from arid land had, together with the agricultural labourer and the rural artisan, to be provided with means and know-how to better their living and become viable. Efforts to do so were rendered meaningful by the new technology which came to be developed in the agricultural sphere. This involved, among other things, the propagation of high-yielding seeds, the application of chemical fertilisers and the exploitation of ground water. Special programmes and new institutions were established to reinforce this effort. The significance of ground water implied, as corollary, the importance of the use of power. Hence the nationwide programmes of rural electrification in order, among other things, that water might be made available from under the ground to the field.

From this brief sketch it would appear that the following items are among the more important ones for a discussion of the priorities which implicitly or explicitly underlie the recent vicissitudes of Indian agriculture:

1. Objectives:
 - (a) Larger production
 - (b) Better distribution
 - (c) Lesser inequalities
2. Resources:
 - (a) Natural resources
 - (b) Financial resources
 - (c) Human resources
3. Technology and know-how:
 - (a) Agriculture (high-yielding and short duration seeds, fertiliser application, etc.)
 - (b) Animal husbandry (cross-breeding, etc.)
 - (c) Horticulture
4. Inputs:
 - (a) Seed, fertiliser, etc.
 - (b) Water
 - (c) Power
 - (d) Credit
 - (e) Communications (village roads)
5. Financial Institutions:
 - (a) Cooperative Banks and Societies
 - (b) Land Development Banks
 - (c) Commercial Banks
 - (d) Refinancing Agencies like ARDC
 - (e) Rural Electrification Corporation (REC)
6. Development and Promotional Institutions:
 - (a) Agro Industries Corporations
 - (b) Infrastructure Corporations
 - (c) Minor Irrigation Corporations
 - (d) CADA
 - (e) CADP
7. (a) Institutions designed specifically for the weaker classes and less well-endowed areas;
SFDA; MFAL; DPAP; etc.
 - (b) Better and more equitable distribution:
 - (i) Food Corporation of India

- (ii) Agricultural Prices Commission
- (c) Larger production: IADP, etc.
- 8. Review of working of institutions and programmes
- 9. Evaluation of institutions and programmes with reference to objectives.

Major Dimensions of Programme Management in Agriculture

Some points are raised below so that some meaningful discussions may be generated. These points are by no means complete or comprehensive.

In the third world countries, based on past experience, one problem that appears to be fairly common is the existence of dichotomy between programme/project formulation in terms of policy and project implementation. How to meaningfully deal with these dynamics of dichotomy between policy formulation and policy implementation? Is it possible to establish organic linkage between the policy formulation group and the policy implementation group?

One very significant characteristic that has been identified by researches conducted in the developed countries and the developing countries is a study of significant differences in terms of people's culture, traditions and convention. Edward T. Hall, who has made studies in North America, European continent, African and Asian countries, has come out with distinction between low-context culture and high-context culture. Americans and the developed countries in the continent by large, according to him, fall in the category of low-context culture which means that the behaviour patterns of people in these countries, irrespective of their profession or vocation, have segmented their behaviour. For example, in work situation they are highly competitive although in the family environment they try to work out a more closer culture in relation to their wives and children. There is a high degree of segmented behaviour patterns. The study in the developing countries, including Japan, indicates that the behaviour patterns of people, particularly in agricultural sector where western culture has not made a

major impact, are not integrated and as such he calls it high-context culture. An Agriculturist's concept of time, relationship with land, crops, inputs, social life, family life and community life including identification with rites, ceremonies, mores, traditions, etc., are so closely inter-related that there is a continuity in their behaviour pattern. He has found that relationship, among people in these culture, is more based on convention rather than on legalised contract. In homogeneous groups, verbal agreement has a very high sanctity whereas in the western culture this has no sanctity unless it is reduced to legalised contract. Other cultural anthropologists have more or less confirmed these findings.

A relevant question here will be as to what extent these traditional components of behaviour—high-context culture—are relevant in making the programmes for agriculture and making these programmes successful and relevant. Is there any way of utilising positive components of usable culture to modernise agriculture and manage the modernisation process more effectively than has been done. In other words, the question is whether modernisation would mean a major reorientation of the people in developing countries in terms of their attitudes and values or whether, as in Japan, retention of positive elements of culture while adopting to relevant technology is possible.

The whole concept of transfer of technology may have to be critically examined in terms of relevant technology or appropriate technology. This would mean, perhaps, a management system of agricultural programme is different from management of farm programmes in the developed countries. What are the implications in practical terms and what is the viability of this approach particularly in terms of Schumacher's concept of Gandhian ideology, *viz.*, utilising the philosophy that "small is beautiful". Viability of a project, particularly in the rural sector, should not be conceived in terms of capital investment, importation of equipment and modernised techniques only. Rather the technological system and the management system should be geared to people's culture for ultimately it is the motivation and commitment of the people than can make a programme successful or unsuccessful. What is the implication of this approach in terms of time target and cost element? How does one define time and cost? What is the meaning of social

cost instead of the concept of cost as understood by accountants and finance people.

There are, no doubt, other very relevant questions but I thought that the group may like to pay some attention to these.

Rural Institutions in Agricultural Development—Some Issues

Peoples' participation in the process of development has been made on several assumptions. Some of them were:

- (a) Involvement of the peoples' organisations in agricultural development programmes would mean raising agricultural production. Programme implementation will also become more effective, and, as a consequence, all round prosperity of the rural people will increase. Thus, the foremost aim of community development programmes was to raise agricultural production through peoples' participation.
- (b) Local rural organisations were also meant to give the villages the ability to take economic and social decisions for themselves. The hope was that it would raise the political maturity of the people and thus democracy would become more meaningful for the nation as a whole. For example, Panchayati Raj in India was conceived to fulfil this aim. Certain organisations were conceived to eliminate the dependence of the poor on the vested interests. It was assumed that organisations working specifically for the under privileged will help to improve their lot. During the post-quarter century, cooperatives were established by many countries for this purpose.

However, these organisations failed by and large to achieve their objectives. The reasons were not far to seek.

- (a) The agrarian structure was steeped with inequality and the interests of the landlord, the tenant and the landless agriculture labour did not coincide. The village was not a community. Community action was therefore action of the powerful at the cost of the weak. But

community development primarily focussed its attention on a community and its ability to help itself. When there was no community or identity of interests such self-help also could not follow.

- (b) Steep inequalities in the agrarian structure also meant that the group of vested interests in the rural areas tended to corner whatever benefits were directed at the village. Local participatory mechanism became a powerful bargaining medium for the rural elite. So panchayats, cooperatives and similar organisations fell victims to their machinations. Genuine urges of the people were not reflected.
- (c) Development was a top down process. Therefore, rural organisations became mechanisms where demands on the Central planning process could be made and concessions extracted. However, the concessions went to benefit those who demanded them. Consequently the poor and the under privileged were left out of the entire development. This led to alienations of the masses in general. Naturally they asked: Why should we participate?

This is the crux of the problem of mass participation in development process. People would be involved only if they perceive benefits accruing out of this involvement. Otherwise, rural organisations have no meaning for them.

Objective conditions of social living in villages and concomitantly the framework of development have to be changed in order to involve people in the developmental process. Otherwise State sponsored schemes are seen as mechanisms of manipulation and people as subjects of development only.

National Agricultural Policies— A Few Issues for Consideration

Any form of agriculture involves a change in man's natural environment and situation. "Man has needs that can be satisfied only by transforming nature but in transforming nature, he transforms himself; as man's powers expand, he gains a new consciousness and new needs—technological, psychological and spiritual—which serve to further stimulate man's activities and search for new power."

What makes the contemporary world from the world of the past is the power to transform nature but in transforming nature, man transforms himself.

The common endeavour of the developing countries is to move from subsistence agriculture to modernised agriculture which can throw up surpluses. Thus when considering the National Agricultural Policy, we have to first consider the broader question of them all: What sort of a society do we want to build? Traditionally agriculture has received low priority in National Development Policy. Expectation was that industrialisation, urbanisation and growth in economy would take away much of the burden and solve problems of employment, growth and that of agriculture sector as well. While this has apparently helped, it has not solved the problem of self-sufficiency in food, self-reliance or improving the lot of the millions of people in the developing world. This deserves a close look at our agricultural policy with the required industrial base to strengthen both and give a totality to our developmental efforts.

What does the process of modernisation from a subsistence to an economic agriculture involve? The problems it poses go beyond technology, for while science has no boundaries, technology has. It is, therefore, necessary to link up technology with

density of population, levels of development, the skills of manpower and not concentrate merely on the analysis of land and water resources but have a close look at the human resources as well. The broad agricultural policy will have implications for our approach to land use, water management, energy and price policy, our arrangements regarding inputs, our labour intensification *vis-a-vis* capital intensification strategies. If the goal is raising agriculture productivity and reaching certain amount of self-reliance and self-sufficiency in food depending upon each country's resource endowment and its strong points with regard to the type of crop it can grow well, the question of diversification or intensification of crop and integrated development pose important problems. The policy impact on productivity, income distribution and poverty is to be assessed and while building up institutions to support agricultural policy, one will have to consider the problem of equity and the possible consequences of an action on vulnerable sections of the population. This will mean an appropriate strategy and support system.

In organisations, there are mainly two models: (a) disaggregated or decentralised or (b) centralised. Each has its own advantages and shortcomings. The difficulty is really of building of integration with both vertical and horizontal inter-linkages. This is particularly true in a fragmented society—fragmented by historical discontinuities, educational standards, administrative structure and in structural and cultural aspects.

One of the major dimensions of policy consideration would be how to make administration responsive to the needs of a changing society. This means a constant inter-action between administrators and farmers and proper personnel policies and suitable administrative structure which need a reorientation through training and example.

What kind of technology and agricultural systems (*i.e.*, double or triple cropping) should be used? This involves not only a consideration of the resources available to the country but more important on the type of transformation that a country is able to muster through 'community of will'. Specifically, this leads to institutional support to provide on the one hand, (a) inputs such as seeds, fertilisers, credit and machinery, and on the other (b) a marketing network, and (c) basic and

applied research. Any agricultural policy must make a provision for these.

In India we have a number of organisations which have been set up to meet the specific needs but mere building up of national bodies does not fulfil the objectives unless they are facilitated and enabled to build up instrumentalities at the operational level.

A serious economic problem which have traditionally faced agriculture—first in the developed countries and now increasingly in some developing countries have to be faced. These are: (i) the problem of great short-term price instability in agriculture, and (ii) that of falling long-range relative prices for agriculture. These can be handled by institutions such as Agricultural Price Commission.

Ultimately the crucial problem that is posed is that of marrying the decentralised and disaggregated operational aspect with the centralised and highly conceived institutional framework. There is generally a tendency to have a dualistic approach and both of these run on parallel lines. It is important to bring them together and the national institutions should have roots firmly in the ground in various local organisations from where they should derive strength and support and form policies on the basis of this interaction. Only such a system can save us from the confusion of the amorphous, disaggregated, powerless, resource-scarce local model on the one hand and the rigid and highly prestigious centralised organisation on the other.

National Agricultural Policy cannot rest merely with spelling out its goals in terms of agricultural productivity, self-reliance and distributive justice but these goals will have to be translated into appropriate strategies, administrative structures and operational action programmes.

Identification of Interfaces for Agricultural Development and Prioritisation

Organisations have a tendency to be autonomous and ignore linkages to achieve their overall objectives. This results in autopsy. There is, therefore, a need to maintain workflow in a situation of organisational discontinuity and forge links between various units. "Of key significance is the extent and effectiveness of linkages between and among institutions, horizontally with other organisations at the same level and vertically between local organisations and structures at the centre of government which set policy and allocate resources".

Acknowledging the criticality of the problem, two approaches have been suggested to bridge the empty space or the interfaces between organisations. One of these is management-science-oriented with emphasis on operations research techniques such as scheduling, programming through network and so on where inter-departmental coordination is established through these tools. This, of course, presupposes the existence of a fair degree of understanding among the involved organisations and the establishment of a task force structure for achievement of objectives. The other approach is from the standpoint of organisation theory where inter-organisational integration can be achieved in two ways:

- (a) by *inter-personal coordination* with the help of well defined objectives and a standing plan of action agreed upon by the involved organisations; and
- (b) by the *feedback* through *personal communication* across the organisational boundaries and *collective effort* resembling some form of committees consisting of members of participating organisations. Both these approaches are based upon socio-economic, politico-

legal and administrative environment, which sets the goal and priorities and propels the organisational linkages through an ideological setting or value system.

When applied to the context of agricultural development, the issue of interface regulation looms large as a critical organisational variable because of a large constellation of organisations—both public and private—being involved in the activities relating to agricultural development. Especially, the emergence of scientific agriculture with its emphasis on innovative technology and agronomic practices has led to tasks specialisation and organisational complexity. Prioritisation is inevitable in this context partly because of the levels of development and imperative nature of agriculture which is dictated by several operations. Agricultural productivity today is dependent on timely supply of agro-meteorological data, scientific culture of land and application of appropriate nutrients, regular and efficient delivery system for various inputs such as quality seeds, irrigation water, fertilisers, pesticide, loanable funds, repair services and the like. The catering organisations, however, are a constellations of agencies consisting of numerous specialised government departments, public corporations, and private suppliers. Due to the increasing specialisation of activities, the manipulation of the interfaces between government organisations has become a complex task. There are all kinds of *ad hoc* arrangements in vogue including permanent and transient committees, informal gatherings of officials, inspections and calling for records and returns, corporations and coordination through Board of Directors system. When this is added the whole array of other organisations currently involved in activities impinging on agricultural productivity, the interface regulation problem becomes much more acute. Yet, every practising administrator knows how important it is to integrate the operations of all these organisations in the interest of fulfilment of agricultural targets.



Selected Bibliography

PART I

ASIA

ECONOMIC DEVELOPMENT/RURAL DEVELOPMENT	473
AGRICULTURAL POLICY AND PLANNING	480
LAND TENURE/REFORM	483
AGRICULTURAL ADMINISTRATION	487
FARM LABOUR AND PEASANTS' ORGANISATIONS	487
AGRICULTURAL INPUTS AND TECHNOLOGY	489
AGRICULTURE—FINANCIAL ASPECTS	492
AGRICULTURAL DEVELOPMENT	493
AGRICULTURAL MARKETING AND FOOD SUPPLY	498

PART II

INDIA

AGRICULTURE (GENERAL)	500
AGRICULTURAL POLICY AND PLANNING	502
LAND TENURE/REFORM	504
AGRICULTURAL ADMINISTRATION	510
FARM LABOUR AND PEASANTS' COOPFRATION	513
AGRICULTURAL INPUTS AND TECHNOLOGY	516
AGRICULTURE—FINANCIAL ASPECTS	523
AGRICULTURAL DEVELOPMENT	530
AGRICULTURAL MARKETING AND FOOD SUPPLY	531



1

2

3

4

5

6

7

ASIA

ECONOMIC DEVELOPMENT/RURAL DEVELOPMENT

- ADKE, A.S. *Rural reconstruction in India*. Dharwar, Karnataka University, 1974.
- ADLEMAN, I. *Who benefits from economic development?* Paper prepared for the World Bank. (Mimeo). Washington, D.C., 1972.
- ADLER, J.H. "World Bank's concept of development", *In: Development and Planning*, edited by J.N. Bhagawati and R.S. Eckaus. London, Allen and Unwin, 1972.
- AGARWAL, A.N. *Indian economy: nature, problems and progress*. Delhi, Vikas, 1975.
- AHMAD, NAFIS. *A new economic geography of Bangladesh*. New Delhi, Vikas, 1976.
- AQUA, RONALD. *Local government and rural development in South Korea*. Ithaca (N.Y.), Rural Development Committee, Centre for International Studies, Cornell University, 1974.
- ASIAN CENTRE FOR DEVELOPMENT ADMINISTRATION. *Strategies of rural development in Asia: a discussion*. Kuala Lumpur, ACDA, 1976.
- ATAL, YOGESH and RALPH PIERIS (ed.) *Asian rethinking on development: a symposium*. New Delhi, Abhinav Publications, 1976.
- AZIZ, SARTAJ. "The Chinese approach to rural development", *International Development Review*, 15:4 (1973), 2-7.
- BADGLEY, JOHN. *Asian development: problems and progress*. New York, Free Press, 1971.
- BANERJEE, AJIT and others. *The new international economic order: an overview of issues and implications for change in action at national level*. Kuala Lumpur, Asian Centre for Development Administration, 1976.

- BEHARI, B. "For rural industrialisation". In: OECD Development Centre. *Low-cost technology: an inquiry into outstanding policy issues*. Interim report of the study sessions held in Paris, 17th-20th Sept. 1974, Industry and Technology CD/TI (75) 1: 108-9. Paris, OECD Development Centre, 1975.
- BEHARI, B. "Technology for fuller rural employment". In: OECD Development Centre. *Low-cost technology: an inquiry into outstanding policy issues*. Interim report of the study sessions held in Paris, 17th-20th September 1974, Industry and Technology CD/TI (75) 1:108. Paris, OECD Development Centre, 1975.
- BEPIN BEHARI. *Economic growth and technological change in India*. Delhi, Vikas, 1974.
- BERNSTEIN, H. "Modernisation theory and the sociological study of development". *Journal of Development Studies*, 7:2.
- BERNSTEIN, H. (ed.) *Under-development and development: selected readings*. Harmondsworth (Middlesex), Penguin, 1973.
- BHATIA, B.M. *Poverty, agriculture and economic growth*. New Delhi, Vikas, 1977.
- BHATTACHARYA, VIVEK RANJAN. *Challenge of village India*. Delhi, Metropolitan, 1971.
- BLACKTON, JOHN S. *Local government and rural development in Sri Lanka*. Ithaca (N.Y.), Rural Development Committee, Centre for International Studies, Cornell University, 1974.
- BOLTHO, ANDREA. *Japan: an economic survey, 1963-1973*. London, Oxford University Press, 1975.
- BRENNER, Y.S. *Agriculture and the economic development of low income countries*. The Hague, Mouton, 1971.
- BURKI, SHAHID JAVED. *Rural development and local government in Pakistan: the Punjab experience*. Ithaca (N.Y.), Rural Development Committee, Centre for International Studies, Cornell University, 1974.
- CHATURVEDI, H.R. *Bureaucracy and the local community; dynamics of rural development*. Bombay, Allied, 1977.
- CHAUBEY, N.P. *Motivational dimensions of rural development: a study of risk-taking, risk-avoidance and fear of failure in villagers*. Allahabad, Chitanya Publishing House, 1974.

- CHAUDHURI, PRAMIT (ed.). *Aspects of Indian economic development: a book of readings*. London, Allen and Unwin, 1971.
- CHEE, STEPHEN. *Rural local governance and rural development in Malaysia*. Ithaca (N.Y.). Rural Development Committee, Centre for International Studies, Cornell University, 1974.
- CHEEMA, G. SHABBIR. "Rural local government and rural development in China, India and Pakistan", In: *Approaches to rural development in Asia*, Vol. 1, p. 109-61. Kuala Lumpur, Asian Centre for Development Administration, 1975.
- COLE, DAVID C. and others. *Korean development: the interplay of politics and economics*. Cambridge (Mass.), Harvard University Press, 1971.
- DAS, SANTWANA KUMAR. *The changing image of India*. New Delhi, Abinav Publications, 1977.
- DASTUR, DINSHAW J. *This or else: a master plan for India's survival* Bombay, Jaico, 1974.
- DHOLAKIA, BAKUL H. *The sources of economic growth in India*. Baroda, Good Companions, 1974.
- DWYER, D.J. (ed.) *China now: an introductory survey with readings*. London, Longman, 1974.
- ELLIOTT, CHARLES. "Income distribution and social stratification: some notes on theory and practice", *Journal of Development Studies*, 8:3 (1972), 37-57.
- ENSMINGER, DOUGLAS. *Rural India in transition*. New Delhi, All India Panchayat Parishad, 1972.
- EPSTEIN, T. SCARLETT. "Dimensions of rural development". In: *Opportunity and response: case studies in economic development*, edited by Scarlett T. Epstein and David H. Penny. London, C. Hurst, 1972.
- ERB, GUY F. and VALERNIA KALIB (eds). *Beyond dependency: the developing world speaks out*. New York, Praeger, 1975.
- FAALAND, JUST and J.R. PARKINSON. *Bangladesh: the test case of development*. New Delhi, S. Chand, 1977.
- GEIGER, THEODORE and FRANCIS M. GEIGER. *The development progress of Hong Kong and Singapore*. London, Macmillan, 1976.
- HANS-DIETER, EVERS (ed.). *Modernization in South East Asia*. Singapore, Oxford University Press, 1973.
- HANSEN, GARY E. *The politics and administration of rural development in Indonesia: the case of agriculture*. Berkeley,

- California Centre for Southeast Asian Studies, University of California, 1975.
- HAQUE, W. and others. *Towards a theory of rural development*. Bangkok, United Nations Asian Development Institute, 1975.
- HASAN, PARVEZ. *Korea: problems and issues in a rapidly growing economy*. Baltimore, Johns Hopkins University Press, 1976.
- HOMJI, HOMI B. MINOCHER. "Institution-building for community development in Asia: models, problems, process", In: *Organization of peasants in Asia*; edited by Arnold Wehmhoerner. Friedrich-Ebert-Stiftung, Bangkok, 1974, p. 209-25.
- ICHIMURA, SHINICHI (ed). *The economic development of East and Southeast Asia*. Honolulu (distributor), East-West Centre, 1975.
- IGLESIAS, GABRIEL U. (ed). *Implementation: the problem of achieving results: a casebook on Asian experiences*. Manila, Eastern Regional Organisation for Public Administration, 1976.
- INAYATULLAH. *Emergence of contemporary world order and strategies for changing its economic aspect*. (Mimeo). Kuala Lumpur Asian Centre for Development Administration, 1976.
- INAYATULLAH. *Transfer of Western development model to Asia and its impact*. Kuala Lumpur, Asian Centre for Development Administration, 1975.
- INGEL, MARCUS. *Local governance and rural development in Thailand*. Ithaca (N.Y.), Rural Development Committee, Center for International Studies, Cornell University, 1974.
- INTERNATIONAL LABOUR ORGANIZATION. *Sharing in development: a programme of development equity and growth for the Philippines*. Vol. 1 Main report. Geneva, 1973.
- INTERNATIONAL Seminar on Development, 6th Kuala Lumpur, 1971. Report. Kuala Lumpur, Malaysian Centre for Development Studies, 1972.
- KASDAN, ALAN R. *The third world: a new focus for development*. Cambridge (Mass.), Shankman, 1973.
- KELLEY, ALLEN C. and JEFFREY G. WILLIAMSON. *Lessons from Japanese development: an analytical economic history*. Chicago, University of Chicago Press, 1974.

- KHAN, AKHTER HAMID and D.L. GORDON. *Institutions for rural development in Indonesia*. Peshawar, Pakistan Academy for Rural Development, 1974.
- KLATZMANN, JOSEPH. "Agriculture and industry in developing countries". In: *Rural development in a changing world*; edited by R. Weitz. Cambridge (Mass.). MIT Press, 1971.
- KULP, EARL M. *Rural development planning systems analysis and working method*. New York, Praeger, 1970.
- LAKHANI, H.G. "Measurement of contribution of agriculture to economic development of Japan (1880-1895) and India (1951-1966), *Asian, Economic Review*, 12:4 (August 1970), 163-82.
- LAKSHMANAN, M.S. *Economic development in India*. Delhi, Hindustan Pub. Corporation, 1974.
- LANDAU, YEHUDA H. (ed). *Rural communities: inter cooperation and development*. edited by Y.H. Landau and others. New York, Praeger, 1976.
- LEFEBER, LOUIS and others. *Regional development: experiences and prospects & South-East Asia*. The Hague. Mouton, 1971.
- LIM, DAVID (ed.). *Readings in Malaysian economic development*. London, Oxford University Press, 1975.
- MAHAJAN, V.S. *Development planning: lessons from Japanese model*. Calcutta, Minerva Associates, 1976.
- MAHAJAN, V.S. *Planning, development and economic policy in India*. Delhi, Kalyani Publishers, 1974.
- MAUNG, MYA. *Burma and Pakistan: a comparative study of development*. New York, Praeger, 1971.
- MAUZY, DIANE K. "The rural development strategies: organization, administrative performance and political priorities in India and Malaysia". *Philippine Journal of Public Administration*, 19: 1&2 (Jan.-April 1975), 84-112.
- MELLOR, JOHN W. *The new economics of growth: a strategy for India and the developing world*. Ithaca (New York), Cornell University Press, 1976.
- MERCADO, CESAR and others. *Country paper on rural development: Philippine case*. Quezon City, Community Development Research Council, University of the Philippines, 1971.
- MIZOGUCHI, TOSHIYUKI. "An econometric comparison of farm households: economic behaviour in Japan, Korea, and Taiwan", *Developing Economies*, 11:3 (September 1973), 231-43.

- MODDIE, A.D. (ed.). *Approaches to rural development*. Bombay, Leslie Sawhny Programme of Training for Democracy Friedrich-Naumann-Stiftung, 1976.
- MORTIMER, REX (ed.), *Showcase state: the illusion of Indonesia's 'accelerated modernisation'*. Sydney, Angus and Robertson, 1973.
- NICHOLSON, NORMAN K. and DILAWAR ALI KHAN. *Basic democracies and rural development in Pakistan*. Ithaca (N.Y.), Rural Development Committee, Center for International Studies, Cornell University, 1974.
- OHKEWA, KAZUSHI. *Agriculture and economic growth*. Princeton, N.J., Princeton University Press, 1970.
- OHKAWA, KAZUSHI and ROSOVSKY HENRY. *Japanese economic growth: trend acceleration in the twentieth century*. Stanford, Stanford University Press, 1973. 327p.
- PAAUW, DOUGLAS S. and JOHN C.H. FEI. *The transition in open dualistic economics: theory and Southeast Asian experience*. New Haven, Yale University Press, 1973.
- PACHO, ARTURO and VINCENTE D. MARIANO. "Rural development and the church in Abra", *Philippine Journal of Public Administration*, 19: 1 and 2 (January-April 1975), 113-35.
- PENNY, DAVID H. "The agro-economic survey of Indonesia: an appreciation", *Indonesta*, 11 (1971), 111-130.
- PERKINS, DWIGHT H. (ed.). *China's modern economy in historical perspective*. Stanford, Stanford University Press, 1975.
- PIERIS, RALPH. *Asian development styles*. New Delhi, Abhinav Publications, 1977.
- PIERIS, RALPH. *Social development in Asia*. Bangkok, United Nations Asian Development Institute, 1974.
- PREBISCH, PAUL. *Issues in development*. (Mimeo). Delhi, Jawaharlal Nehru University, 1976.
- RAPER, ARTHUR F. *Rural development in action: the comprehensive experiment at Comilla, East Pakistan*. Ithaca (N.Y.), Cornell University Press, 1970.
- REDDY, V. ESWARA. *Sociological aspects of Asian development*. New Delhi, Munshiram Manoharlal, 1974.
- RESNICK, STEPHEN A. "The decline of rural industry under export expansion: a comparison among Burma, Philippines,

- and Thailand, 1870-1938", *Journal of Economic History*, 30 (March 1970), 51-73.
- ROBINSON, E.A.G. and KIDRON, MICHAEL (eds.). *Economic development in South Asia: proceedings of a conference held by the International Economic Association at Kandy, Ceylon*. London, Macmillan, 1970.
- ROBINSON, E.A.G. and KEITH GRIFFIN (eds.). *The economic development of Bangladesh within a socialist framework: proceedings of a conference held by the International Economic Association at Dacca (in 1973)*. London, Macmillan, 1974.
- ROTH, DAVID F. "Towards a multi-dimensional approach to rural policy optimization: the case of rural change strategies in Asia", *Journal of Southeast Asian Studies*, 3:1 (March 1972), 123-41.
- SAGASTI, FRANCISCO. "Underdevelopment, science and technology: the point of view of the underdeveloped countries", *Science Studies*, 3 (1973) 47-59.
- SCOVILLIE, O.J. and J.J. DALTON. "Rural development in Thailand: the ARD program", *Journal of Developing Areas*, 9:1 (1974).
- SEERS, DUDLEY. "The meaning of development", *International Development Review*, 2(1969), 2-6.
- SEERS, DUDLEY, "The meaning of development", In: *The political economy of development and under-development*, edited by Charles K. Wilbur, New York, Random House, 1973.
- SESHADRI, K. *Political linkages and rural development*. New Delhi, National Publishing House, 1976.
- SIMPAS, SANTIAGA S., LEDIVINA CARINO and ARTURO G. PACHO. *Local government and rural development in the Philippines*. Ithaca (N.Y.), Rural Development Committee, Center for International Studies, Cornell University, 1974.
- SINHA, DURGANAND. *Motivation and rural development*, Calcutta, Minerva Associates, 1974.
- SOUTH East Asia: role of agriculture in economic development", *Bank of India Bulletin*, 11:5-6 (May-June 1973), 62-8.
- STAVIS, BENEDICT. *People's communes and rural development in China*. Ithaca (N.Y.), Rural Development Committee, Center for International Studies, Cornell University, 1974.

- STEVENS, ROBERT D. (ed.). *Rural development in Bangladesh and Pakistan*; edited by Robert D' Stevans, Hamza Alavi and Peter J. Bertocci. Honolulu, University Press of Hawaii, 1976.
- STOCKWIN, J.A.A. *Japan: divided politics in a growth economy*. London, Weidenfeld and Nicolson, 1975.
- SWERDLOW, IRWING. *The public administration of economic development*. New York, Praeger, 1975.
- TARLOK SINGH. *India's development experience*. Delhi, Macmillan, 1974.
- THOMAS, CLIVEY. *Dependence and transformation: the economics of the transformation to socialism*. New York, Monthly Review Press, 1974.
- VAN ROY, EDWARD. *Economic systems of northern Thailand: structure and change*. Ithaca (N.Y.), Cornell University Press, 1971.
- VEIT, LAWRENCE A. *India's second revolution: the dimensions of development*. New York, McGraw-Hill, 1976.
- WARD, BARBARA and others (eds.). *The widening gap: development in the 1970's*. New York, Columbia University Press, 1971.
- WARD, RICHARD J. *Development issues for the 1970s*. New York, Dunellen, 1973.
- WEITZ, RAANAN (ed.). *Rural development in a changing world*. Cambridge (Mass.) MIT Press, 1971.
- WILBUR, CHARLES K. (ed.). *Political economy of development and underdevelopment*. New York, Random House, 1973.
- WILES, P.J.D. (ed.). *The prediction of communist economic performance*. London, Cambridge University Press, 1971.
- WILLMOTT, W.E. (ed.). *Economic organization in Chinese society*. Stanford, Stanford University Press, 1972.
- YOHANAN, RAMATI (ed.). *Economic growth in developing countries—material and human resources: proceedings of the Seventh Rehovot conference*. New York, Praeger, 1975.

AGRICULTURAL POLICY AND PLANNING

- AFFIFF, SALEH and C. PETER TIMMER. "Rice policy in Indonesia", *Food Research Institute Studies*, 10:2 (1971), 131-59.

- AGRICULTURAL policy in Japan, *Oriental Economist*, 40 (April 1972), 8-14.
- ARCEGA, VICTORIA M. "Mobilizing the bureaucracy: the case of the rice and corn production coordination council", *SEADAG Papers* No. 64 (January 7/8, 1970), 1-15.
- BALDWIN, WILLIAM L. "The Thai rice trade as a vertical market network: structure, performance, and policy implications", *Economic Development and Cultural Change*, 22:2 (January 1974), 179-97.
- BARDHAN, PRANAB K. "Chinese and Indian agriculture: a broad comparison of recent policy and performance", *Journal of Asian Studies*, 29:3 (May 1970), 515-37.
- BASSOCO, LUZ MARIA and ROGER D. NORTON "A quantitative approach to agricultural policy planning", *Annals of Economic and Social Measurement*, 4:4 (Fall 1975), 571-94.
- BHATIA, B M. "China's food plan: reliance on higher productivity", *Statesman* (29 September 1976), 4.
- BONG, K S. *The strategy for Agricultural development in Korea*. Seoul, Samhwa Corporation, 1971.
- BROADBENT, KIERAN. "Agriculture, environment and current policy in China", *Asian Survey*, 16:5 (May 1976), 411-26.
- CHANG, CHI-WEN. *A strategy for agricultural and rural development in Asian countries*. Laguna, South-East Asian Regional Centre for Graduate Study and Research in Agriculture College, 1974.
- CLINE, WILLIAM R. "Interrelationships between agricultural strategy and rural income distribution (Conference paper)", *Food Research Institute Studies*, 12:2 (1973), 139-57.
- COCHRANE, W. WILLARD. *Agricultural development planning: economic concepts, administrative procedures and political process*. New York, Praeger, 1974.
- DALISAY, AMANDO M. "Public administration in Philippine agriculture and its adjustment to policy challenges in the 1970's", *Economic Research Journal*, 17 (March 1971), 256-66.
- DE SILVA L. "A critical evaluation of agricultural policy, 1960-68", *Central Bank of Ceylon Staff Studies*, 1 (April 1971), 93-110.
- ELA, TEODORO M. "Redirection of Philippine agriculture," *Commerce (Philippines)*, 69 (June 1972), 6-12.

- ELKINTON, CHARLES M. "East Pakistan's agricultural planning and development, 1955-1969: its legacy for Bangladesh" In: *Rural development in Bangladesh and Pakistan*, edited by Robert D. Stevens and others, Honolulu, East-West Center Book, 1976.
- FALCON, WALTER P. and GUSTAV F. PAPANEK, *Development policy II: the Pakistan experience*. Cambridge, Mass., Harvard University Press, 1971.
- "For INCREASED FOOD production: from the 1974 White paper on agriculture" *Oriental Economist*, 43 (1973), 11-14.
- FORD FOUNDATION. *Policies and measures leading toward greater diversification of the agriculture economy of the Federation of Malaya*. Kuala Lumpur.
- GAIKWAD, V.R. *Small farmers: state policy and programme implementation*. Hyderabad, National Institute of Community Development, 1971.
- GHOSH, A.P. *Development planning in South-East Asia*. Rotterdam, Rotterdam University Press, 1974.
- HALLETT, GRAHAM. *The economics of agricultural policy*. Oxford, Basil Blackwell, 1971.
- HANUMANATHA RAO, C.H. "Socio-political factors and agricultural policies", *Economic and Political Weekly*, 9: 32-34 (August 1974), 1285-92.
- HASAN, PARVEZ. "Agricultural growth and planning in the 1960's" In: *Rural development in Bangladesh and Pakistan*, edited by Robert D. Stevens and others. Honolulu, East-West Center Book, 1976.
- HUSSEIN WAFI, SYED. *Land development strategies in Malaysia: an empirical study*. Kuala Lumpur, Malaysian Centre for Development Studies, 1974.
- INTERNATIONAL Conference of Agricultural Economists, 14th. *Policies, planning and management of agricultural development: papers and reports*. Oxford, Institute of Agrarian Affairs, 1971.
- ISLAM, NURUL (ed.). *Agricultural policy in developing countries: International Economic Association Conference Proceedings*. London, Macmillan, 1974.
- JOHNSTON BRUCE F. and PETER KILBY. *Agriculture and structural transformation: economic strategies in late developing countries*, New York, Oxford University Press, 1975.
- LEAGANS, J. PAUL and CHARLES P. LOOMIS. *Behavioural change in agriculture: concepts and strategies for influencing transition*. Ithaca (N.Y.), Cornell University Press, 1971.

- MACEWAN, A. *Development alternatives in Pakistan—a multi-sectoral and regional analysis of planning problems*. Cambridge (Mass.), Harvard University Press, 1971.
- MINHAS, B S. *Planning and the poor*. New Delhi, S. Chand, 1974.
- ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT. *Agricultural policy in Japan*. Paris, 1975.
- PANT, Y P. and S C JAIN *Long term planning for agriculture in Nepal*. Delhi, Vikas, 1972.
- PRYBYLA, JAN S. "The Asian dilemma: reordering national priorities", *Current History*, 68:406 (June 1975), 249-53.
- RAO, V K R.V. *Growth with justice in Asian agriculture. an exercise in policy formulation*. Geneva, United Nations Research Institute for Social Development
- SREIDHAR. "China's agricultural and industrial policies in 1972", *Institute for Defence Studies and Analysis Journal*, 5:4 (April 1973), 508-27.
- TAMIN BIN YEOP, MOHD. and others. *The cornerstone of agricultural development: conscious planning and systematic implementation*. Alor Star, Muda Agricultural Development Authority, 1972.
- WATERSTON, ALBERT. *Preparing a program for agriculture*. Washington, D.C., Economic Development Institute, 1973.
- WELSH, DELANE E. "Agricultural problems in Thailand: some policy alternatives". *Bangkok Bank Monthly Review*, 12:3 (1971), 89-104.

LAND TENURE/REFORM

- ADAMS, J. and N. HANCOCK. "Land and economy in traditional Vietnam", *Journal of South East Asian Studies*, 1:2 (September 1970), 90-8.
- AHMED, IFTIKHAR and JOHN F. TIMMONS. "Current land reforms in East Pakistan", *Land Economics*, 47 (February 1971) 55-64.
- AHMED, ZAHIR, *Land reforms in South East Asia*. New Delhi, Orient Longmans, 1975.
- AMERASINGHE, NIHAL "An overview of settlement schemes in Sri Lanka", *Asian Survey*, 16:7 (July 1976), 620-36
- BEGMI, MAHESH C. *Landownership in Nepal*. Berkeley, University of California Press, 1976.

- BREDO, W. "Agrarian reform in Vietnam: Vietcong and Government of Vietnam strategies in conflict", *Asian Survey*, 10: 8 (August 1970), p. 738-50.
- CAPLAN, L. *Land and social change in East Nepal*. London, Routledge & Kegan Paul, 1970.
- CHENG, STEVEN N.S. *The theory of share tenancy, with special reference to Asian agriculture and the first phase of Taiwan land reform*. Chicago, University of Chicago Press, 1969.
- DEMAN, D R. "Land reform in Iran", *Agriculture (U K.)* 77: 384-6 (September 70), 436-8.
- ELKINGTON, CHARLES M. *Land reform in Pakistan*. Washington, D.C., U.S. AID., 1970.
- ESPOSITO, BRUCE J. "The politics of agrarian reform in Pakistan", *Asian Survey*, 14:5 (May 1974), 429-38.
- FOBLETS, M.R. *Land problems, tenancy and land reform in Malaysia*. Rome, FAO, 1970.
- HARRISON, PAUL. "Land reforms in Sri Lanka", *Eastern Economist*, 66:23 (4 June 1976), 1235-6.
- HERRERA, R.T. "Land reform in the Philippines", *Economic Research Journal*, 16:4 (March 1970), 210-1.
- HERRING, RONALD and M. GHAFAR CHAUDHREY. *The 1972 land reforms in Pakistan and their economic implications: a preliminary analysis*. Madison, Land Tenure Center, University of Wisconsin, 1973.
- HIZER, GERRIT. *Peasant mobilisation and land reform in Indonesia*, The Hague, Institute of Social Studies, 1972.
- HIZER, GERRIT. *The role of peasant organizations in the Japanese land reform*. The Hague, Institute of Social Studies, 1971.
- HUANG, YUKON. "Tenancy patterns, productivity, and rentals in Malaysia", *Economic Development and Cultural Change*, 23:4 (July 1975), 703-18.
- JOSHI, P.C. "Agrarian change in India and Pakistan since 1974", *Point of View*, 2:35 (20 November 1971), 5-9.
- JOSHI, P.C. "Land reform in India and Pakistan", *Economic and Political Weekly*, 5:52 (26 December 1970), A-145-52.
- KERKVLIT, BENEDICT. "Land reform in the Philippines since the Marcos Coup", *Pacific Affairs*, 47:3 (Fall 1974), 286-304.

- KLATT, W. "Agrarian issues in Asia", *International Affairs*, 48:2 (April 1972), 226-41.
- KOONE, H.D. and L.E. GLEECK. *Land reform in the Philippines*. Washington, D.C., U.S. AID, 1970.
- KRINKS, PETER. "Old wine in a new bottle: land settlement and agrarian problems in the Philippines", *Journal of Southeast Asian Studies*, 5:1 (March 1974), 1-17.
- LAPORTE, ROBERT, Jr. and others. "The concept of agrarian reforms and its role in development: some notes on societal cause and effect", *Comparative Studies in Society and History*, 13:4 (October 1971), 473-85.
- LIN, SEIN and BRUCE ESPOSITO. "Agrarian reform in Thailand: problems and prospects", *Pacific Affairs*, 49:3 (Fall 1976), 425-42.
- LIN, SEIN (ed.). *Readings in land reform*. Taoyuan (Taiwan), Land Reform Training Institute, 1970.
- MISAWA, TAKCO. "Agrarian reform, employment and rural incomes in Japan", *International Labour Review*, 103:4 (April 1971), 393-414.
- MOISE, EDWIN E. "Land reform and land reform errors in North Vietnam", *Pacific Affairs*, 49:1 (Spring 1976), 70-92.
- MONTGOMERY, JOHN D. "Allocation of authority in land reform problem: a comparative study of administrative processes and outputs", *Administrative Science Quarterly*, 17:1 (March 1971), 62-75.
- MORAD, A.A. *Report to the Government of Indonesia on land reforms*. Rome, FAO, 1970.
- MORROW, R.B. and K.H. SHERPER. *Land reform and South Korea*. Washington, D.C., U.S. AID, 1970.
- MUKHERJI, I.N. "Agrarian reforms in Bangladesh", *Asian Survey*, 16:5 (May 1976), 452-64.
- NEPAL, Department of Land Reform. *Report of National Seminar on Land Reform, Kathmandu. October 1970*. Kathmandu, The Dept., 1970.
- OGURA, TAKEKAZU. "The economic impact of postwar land reform on Japan", *Development Digest*, 8:2 (April 1970), 13-22.
- OVERHOLT, WILLIAM H. "Land reform in the Philippines", *Asian Survey*, 16:5 (May 1976), 427-51.

- RAZA, MUHAMMAD RAFIQUE. "The implications of farm consolidation in modernizing agriculture", *Action*, 8:3 (July 1970), 28-32.
- SALTER, M. "The broadening base of land reform in South Vietnam", *Asian Survey*, 10:8 (August 1970), 724-37.
- SALTER, M. *Land reform in South Vietnam*. Washington, D.C., U.S. AID, 1970.
- SAZAMA, GERALD W. and HARLAN DAVIS, "Land taxation and land reform". *Economic Development and Cultural Change*, 22:4 (July 1973), pt.I, 642-54.
- SHAH, S.G. "World Bank of land reforms", *Journal of the Indian Institute of Bankers*, 46:3 (July-September 1975), 160-4.
- SINHA, J.N. "Agrarian reforms and employment in densely populated agrarian economies: a dissenting view", *International Labour Review*, 108:5 (November 1973), 395-421.
- SINHA, SURENDRA PRASAD and RAMANAND THAKUR. "Agrarian structure in Nepal", *Voluntary Action*, 12:6 (November-December 1970), 5-7.
- SMITH, THEODORE REYNOLDS. "Community development and agrarian reform in the East Asian setting (Taiwan, South Korea, Japan and the Philippines)", *American Journal of Economics and Sociology*, 32:1 (January 1973), 73-86.
- TAI, HUNG-CHAO. *Land reforms and politics: a comparative analysis*. Berkeley, University of California Press, 1974.
- TAKIGAWA, TSUTOMU. "Historical background of agricultural land reform in Japan", *Developing Economics*, 10:3 (September 1972), 290-310.
- THAILAND. *National Seminar on Land Problems and Policies in Thailand, Bangkok, Feb. 1970*. Bangkok, 1970.
- TWOMEY, J.B. "Land tenure systems in the Western Pacific High Commission Territories: a comparative study." *Journal of Administration Overseas*, 9:2 (April 1970), 96-109.
- UTRECHT, ERNST. "Land reform and bimas in Indonesia", *Journal of Contemporary Asia*, 3:2 (1973), 149-64.
- VOELKNER, H.E. *Land reform in Japan*. Washington, D.C., U.S. AID, 1970.
- WHITE, C.P. *Land reform in North Vietnam*. Washington, D.C., U.S. AID, 1970.
- WONG, JOHN. *Land reform in the People's Republic of China: institutional transformation in agriculture*. New York, Praeger, 1973.

- WOODSIDE, A. "Decolonization and agricultural reform in Northern Vietnam", *Asian Survey*, 10:8 (August 1970), 705-23.
- YANG, M.M.C. *Socio-economic results of land reform in Taiwan*. Honolulu, East-West Centre Press, 1970.
- ZAMAN, M.A. *Land reform in Bangla Desh to 1970*. Madison, University of Wisconsin, 1976.

AGRICULTURAL ADMINISTRATION

- DENT, J.B. and J.R. ANDERSON (eds). *Systems analysis in agricultural management*. Sydney, John Wiley, 1971.
- HANSEN, GARY E. "Rural administration and agricultural development in Indonesia", *Pacific Affairs*, 44:3 (Fall 1971), 390-400.
- HUNTER, GUY. *The implementation of agricultural development policies: organization, management and institutions*. London, Overseas Development Institute, 1974.
- KOTTER, HERBERT. "Aspects of farmer motivation and participation in programme planning and implementation", In: *Extension and other services supporting the small farmer in Asia*. Rome, FAO, 1972.
- ROGERS, M. EVERETT. *Communications strategies for agricultural development*. 1974. Report No. 7 of the Academy for Educational Development prepared for USAID.
- SOOS, G. "Some aspects of state direction and control of agriculture", *Partelet* (Budapest), 20:8 (1975), 18-24.
- WEEKS, ELDON E. and others. "Monitoring the agricultural economy: strains on the data system", *American Journal of Agricultural Economics*, 56:5 (December 1974), 976-83.

FARM LABOUR AND PEASANTS' ORGANISATIONS

- ABDUL HALIM ISMAIL. "Peasant agriculture labour force in West Malaysia: a preliminary study", *Development Forum*, 3:1 (December 1972), 41-53.
- AHMAD SARJI BIN ABDUL HAMID. *Farmers' co-operative in Malaysia: towards an integrated approach in rural development*—Paper presented at the Seminar on Approaches to Rural Development in Asia, Kuala Lumpur, 26 May-3 June, 1975.
- AHMAD SARJI BIN ABDUL HAMID. *'Farmers' organisation: an integrated approach to rural economic development*. Kuala Lumpur, Farmers' Organization Authority, 1973.

- ARIYARATNE, D.M. *Farmers' organisations and the administrative machinery: an evaluation undertaken for feasibility work*, Colombo, 1972.
- ELIMAN, A O. and D. de S. RATNAWERA. *Thannimurippu Paripalana Sabai case study: the transfer of administration of an integrated settlement scheme from government officials to a people's organization* Colombo, Agrarian Research and Training Institute, 1973.
- DORNER, P and D. KNOAL. *Group farming issues and prospects: a summary of international experience (A Seminar Report)*. New York, Agricultural Development Council, 1975.
- FOOD AND AGRICULTURAL ORGANIZATION. *Operational efficiency of agricultural cooperatives in developing countries*, by Eberhard Diilfer, Rome, F.A.O., 1974.
- FREDERICKS, LEO J. *Farmer Institutions: Country paper for Malaysia presented to the Workshop on the Development of Human Resources in Rural Asia*, Swaganivas, Aug. 1974.
- FREDERICKS, LEO J. "The farmers organisation authority in Malaysia", *Journal of Administration Overseas*, 14:2 (April 1975), 76-90.
- GALJART, BENNO. "Peasant co-operation, consciousness and solidarity", *Development and Change*, 6:4 (October 1975), 75-83.
- HUIZER, GERRIT. *The role of peasant organizations in the Japanese land reform*. The Hague, Institute of Social Studies, 1971 (Occasional paper, No. 12).
- IMPERIAL, D.A. *Group action for rural development: insights for nine farmers associations*. Los Banos (Laguna), Farm and Home Development Office, College of Agriculture, University of the Philippines, 1971.
- INAYATULLAH (ed). *Cooperatives and planned change in Asian rural communities: case studies and diaries*. Geneva, United Nations Research Institute for Social Studies, 1970.
- INDONESIA. Ministry of Transmigration and Cooperatives. Directorate General of Cooperatives. *Cooperatives in Indonesia. 1971: policy of the Indonesian Government toward cooperatives*. Djakarta, 1972.
- KONOPNICKI, MAURICE. "Agricultural cooperation and the state", *Annals of Public and Co-cooperative Economy*, 46:2 (April-June 1975), 163-86.
- LAIDLAW, A.F. *The mobilization of human resources by Agricultural cooperatives*, Rome, FAO, 1973.

- MANDAL, G.C. "Agricultural cooperatives in Japan," *Economic and Political Weekly*, 5 (26 September 1970), A-129-31.
- MAZUMDAR, D. *The problem of unemployment in peninsula Malaysia*. (Draft report prepared for the World Bank), 1974.
- PANDEY, S.M. "Organization of agricultural labours: an Indian case study", *Indian Journal of Industrial Relations*, 12:4 (April 1977), 467-506.
- ROSEN, GEORGE. *Peasant society in a changing economy: comparative development in Southeast Asia and India*. Urbana (Ill.), University of Illinois Press, 1975.
- SCOTT, HENRY G. *Aspects of agricultural employment and productivity in some developing Asian countries*. Birmingham, University of Birmingham, 1972. (Faculty of commerce and social science occasional paper, No. 16).
- SCOTT, JAMES and BEN KERKVLICT. "The politics of survival: peasant response to progress' in Southeast Asia", *Journal of Southeast Asian Studies*, 4:2 (September 1973), 24-68.
- SHANIN, T. (ed.). *Peasant and peasant society*. Harmondsworth (Middlesex), Penguin, 1971.

AGRICULTURAL INPUTS AND TECHNOLOGY

- AURORA, G.S. and W. MOREHOUSE. "Dilemma of technological choice: the case of the small tractor, *Economic and Political Weekly*, 7:31-33 (August 1972), 1633-44.
- BARKER, RANDOLPH and others. "Employment and technological change in Philippine agriculture", *International Labour Review*, 106:2-3 (August-September 1972), 111-39.
- BELL, C. "The acquisition of agricultural technology its determinants and effects", *Journal of Development Studies*, 9 (October 1972), 123-59.
- BOREL, P. "Some lessons from the transfer of science". In: OECD Development Centre. *Low-cost technology: an inquiry into outstanding policy issues*. Interim Report of the Study Sessions held in Paris. 17th-20th September, 1974. Industry and Technology, CD/TI (75) 1. Paris: OECD Development Centre, 1975.
- CLARK, COLIN. *The economics of irrigation*; 2nd ed. Oxford Pergamon Press, 1970.
- COOPER, CHARLES (ed.). *Science technology and development: the political economy of technical administration in under-developed countries*. London, Frank Cass, 1973.

- COWARD, WALTER, Jr. "Institutional and social organizational factors affecting irrigation: their application to a specific case", *Water management in Philippine irrigation systems: research and operations*. Los Banos, IRRI, 1972.
- DRILON, J.D., Jr. "Agricultural modernization progress and problems", *International Technical Co-operation Centre Review*, 3:3 (July 1974), p. 17-25.
- ERNST, KARL and GERD R. ZIMMERMANN. "The role of agricultural inputs in increasing food production employment and income; conclusions based on a project in Indonesia", *Economics*, 13 (1976), 114-26.
- FOOD AND AGRICULTURE ORGANISATION. *Introduction and effects of high-yielding varieties of rice in the Philippines*. Rome, FAO, 1971.
- FOOD AND AGRICULTURE ORGANIZATION. *World plan of action for the application of science and technology to development*. Rome, FAO, 1970.
- GAUTRON, P. *Irrigation and drainage network in Prek Thnot Basin pilot project: Water administration and legislation for irrigation and drainage*. Rome, Land and Water Development Division, FAO, 1973.
- GEMMILL, GORDON and CARL EICHER. "The economics of farm mechanization in developing countries", *Development Digest*, 14:1 (January 1976); 39-47.
- GOTSCH, CARL H. "Tractor mechanization and rural development in Pakistan", *International Labour Review*, 107:2 (February 1973), 133-66.
- HANUMANTHA RAO, C.H. "Factors underlying technological change in agriculture: experiences of India and other Asian countries", In: *Studies in Asian social development No. 2*; edited by Suren Navlakha, Vikas Publishing House, Delhi, 1974, p. 33-65.
- HAQ, CHONDAKER AZHARUL. "Experience with low-cost tubewell irrigation". In: *Rural Development in Bangladesh and Pakistan*, edited by Robert D. Stevens and others. Honolulu, East-West Centre Book, 1976.
- HERDT, ROBERT W. and EDWARD A. BAKER. "Agricultural wages, production and the high-yielding varieties". *Economic and Political Weekly*, 7:13 (25 March 1972), A-23-30.
- HIGNETT, T.P. and F.P. ACHORN. *Expansion of the fertilizer industry in the Philippines*. Muscle Scholas (Alabama), National Fertilizer Development Centre, 1974.

- INTERNATIONAL LABOUR ORGANIZATION. *Mechanization and employment in agriculture: case studies from four sub-continent*s. Geneva, I L O., 1973.
- KANEDA, HIROMITSU and MOHAMMAD GHAFAR. "Output effects of tubewells on the agriculture of the Punjab: some empirical results", *Pakistan Development Review*, 10:1 (1970), 68-87.
- KLATT, W. "Reflections on agricultural modernisation in Asia", *Pacific Affairs*, 46:4 (Winter 1973-74), 534-47.
- KROPP, ERHARD W. "Economics of farm size and other socio-economic aspects of technological change in the agriculture of South Asian countries", *Economics*, 13 (1976), 55-74.
- McINERNEY, JOHN P. *The consequences of farm tractors in Pakistan*. Washington, D.C., International Bank for Reconstruction and Development, 1975.
- NIAZ, SHAFI. "Agriculture mechanization in Pakistan", *Journal of Rural Development and Administration*, 7:2 (April/June 1970), 57-69.
- RADOSEVICH, GEORGE E. *Water user organizations for improving irrigated agriculture: applicability to Pakistan*. Colorado, Colorado State University, 1975.
- RAJ, K.N. "Mechanisation of agriculture in India and Sri Lanka (Ceylon)", *International Labour Review*, 106:4 (October 1972), 315-34.
- ROSE, C.J. "Management science in the developing countries: a comparative approach to irrigation feasibility", *Management Science*, 20:4 (December 1973), pt. 1, 423-38.
- SAGARDOY, J.A. *Water administration and management for irrigation*. Rome, FAO, 1974.
- SAXENA, J.P. "Fertilizer requirements in 2001 A.D.", *Economic Times* (6 Oct. 1976), 5; (7 Oct. 1976), 5; (8 Oct. 1976), 5.
- SHAND, R.T. (ed.). *Technical change in Asian agriculture*. Canberra, Australian National University Press, 1973.
- SOUTHWORTH, HERMAN. *Farm mechanization in East Asia*. New York, Agricultural Development Council 1972.
- STOUT, B.A. and C.M. DOWING. "Agricultural mechanisation policy", *International Labour Review*, 113:2 (March-April 1976), 171-87.
- TOJIB, HADIWIDJAJA. "New trends in agricultural development programme in Indonesia", In: *Indonesia: resources and*

their technological development, edited by Howard W. Beers. Lexington, University Press of Kentucky, 1970.

VON BLANKCKENBURG, PETER. "Socio-economic polarisation vs. differentiation based on achievement: who benefits from the seed fertilizer technology in densely populated developing countries?" *Economics*, 10 (1974) 7-31.

YUDELMAN, MONTAGU and others *Technological change in agriculture and employment in developing countries*. Paris, Organization for Economic Cooperation and Development, 1971.

ZAHEER, M. "Irrigation command area projects: a new phase in water-management planning", *Behavioural Sciences and Community Development*, 9:1 (March 1975), 1-9.

AGRICULTURE—FINANCIAL ASPECTS

ANAND, S. The size distribution of income in Malaysia: Paper prepared for the Development Research Center of the World Bank. (Mimeo). Washington, D.C., 1974.

BHATI, V N. "Farmer's technical knowledge and income: a case study of Padi farmers of West Malaysia", *Malayan Economic Review*, 18:1 (1973), 36-47.

BIRD, RICHARD M. "Agricultural taxation in developing countries", *Finance and Development*, 11:3 (September 1974), 35-7.

BIRD, RICHARD M. *Taxing agricultural land in developing countries*. Cambridge (Mass.), Harvard University Press, 1974.

CANTO, RENATO G. "The development of agricultural credit in the Philippines", *Philippine Economy Bulletin*, 8 (January-February 1971), 12-24.

CHAUDHRI, D.P. "New technologies and income distribution in agriculture", In: *Agrarian reform and agrarian reformism*, edited by A.D. Lehmann. London, Faber, 1974.

CHENERY, H. and others. *Redistribution with growth*. London, Oxford University Press, 1974.

FOOD AND AGRICULTURAL ORGANIZATION. *Agricultural credit in Asia: report on the FAO regional seminar for Asia on agricultural credit for small farmers, held in Bangkok, Oct. 1974*. Rome. FAO, 1975.

HICKS, URSULA K. "Rural taxation and its contribution to development", *Development and Change*, 1:3 (1969-70), 30-50.

- JOHNSON, ERWIN H. "Land tax and its impact on use and ownership in rural Japan", *Economic Development and Cultural Change*, 19:1 (October 1970), 49-70.
- KATO, YUZURU. "Sources of loanable funds of agricultural credit institutions in Asia: Japan's experience", *Developing Economics*, 10:1 (March 1972), 126-40.
- KING, JOHN A. "The World Bank, project lending, and cooperatives", *Finance and Development*, 9:1 (March 1972), 30-5.
- LEWIS, STEPHEN R., Jr. "Agricultural taxation and inter-sectoral resources transfers (less developed countries)", *Food Research Institute Studies*, 12:2 (1973), 93-114.
- MELLOR, JOHN W. *The impact of new agricultural technology on employment and income distribution: concepts and policy*. Ithaca (N.Y.), Department of Agricultural Economics, Cornell University, 1975.
- NEPAL RASTRA BANK. *Agricultural credit survey, Nepal*. Kathmandu, The Bank, 1972.
- ZEYLSTRA, WILLIAM GUSTAAF. *Aid or debt: the relevance of debt aid to problems of developing countries*. Leyden, Sijthoff, 1975.

AGRICULTURAL DEVELOPMENT

- "AGRICULTURAL production in developing countries in relation to the targets for the second United Nations development decade", *Monthly Bulletin of Agricultural Economics and Statistics*, (FAO), 22 (April 1973), 1-17.
- AHMAD, ZUBEIDA MANZOOR. "The social and economic implications of the green revolution in Asia", *International Labour Review*, 105:1 (January 1972).
- AKINO, MASAKATSU and YUJIRO HAYAMI. "Sources of agricultural growth in Japan, 1880-1965", *Quarterly Journal of Economics*, 88:3 (August 1974), 454-79.
- ALAVI, HAMZA "Elite farmer strategy and regional disparities in the agricultural development of Pakistan", *Economic and Political Weekly*, 8:13 (31 March 1973), A-31-9.
- ALAVI, HAMZA. "The rural elite and agricultural development in Pakistan", In: *Rural development in Bangladesh and Pakistan*, edited by Report D. Stevens and others. Honolulu, East-West Centre Book, 1976.
- ARESVIK, ODDVAR. *The agricultural development of Jordan*. New York, Praeger, 1976.

- BANDYOPADHYAYA, KALYANI. *Agricultural development in China and India: a comparative study*. New Delhi, Wiley Eastern, 1976.
- BANSIL, P.C. and DHANPATRAI. *Ceylon agriculture: a perspective*. Calcutta, Oxford and IBH, 1973.
- BERTOCCI, PETER J. "Social organization and agricultural development in Bangladesh". In: *Rural development in Bangladesh and Pakistan* edited by Robert D. Stevens and others. Honolulu, East-West Centre Book, 1976.
- BLAIR, HARRY W. "The green revolution and economic men", *Pacific Affairs*, 44:3 (Fall 1971), 353-67.
- BROWN, LESTER R. *Seeds of change: the green revolution and development in the 1970's*. N.Y., Praeger, 1970.
- BROWN, LESTER R. "The social impact of the green revolution (based on conference paper)", comments by L. K. Jha and others. *International Conciliation*, (January 1971), 1-61.
- BURKI, SHAHID JAVED. *Agricultural growth and local government in Punjab, Pakistan*. Ithaca (N.Y.), Rural Development Committee, Centre for International Studies, Cornell University, 1974.
- BURKI, SHAHID JAVED. "The development of Pakistan's agriculture: an interdisciplinary explanation", In: *Rural development in Bangladesh and Pakistan*, edited by Robert D. Stevens and others. Honolulu, East-West Centre Book, 1976.
- CEPEDE, MICHEL. "The green revolution and employment", *International Labour Review*, 105-1 (January 1972), 1-8.
- CHAMBERLAIN, HEATH B. and others. "Impressions of agricultural development in a North China county", *Pacific Affairs*, 49:4 (Winter 1976-77), p. 667-79.
- CHEN, KUAN-I. "Agricultural modernization and industrialization in China", *Current History*, 71:419 (September 1976), 64-7+
- CHENERY, HOLLIS B. "Growth and structural change", *Finance and Development*, 8:3 (September 1971), 16-27.
- COMMITTEE on Economic Teaching Material for Asian Universities. *The economics of agriculture*. New Delhi, Wiley Eastern, 1975.
- CUYONO, ROGELIO V. "Organizing for change: a temporary corporative system strategy for generating and diffusing

- agricultural knowledge", *Philippine Journal Public Administration*, 19:3 (July 1975), 198-208.
- DALISAY, AMANDO M. "The green revolution and economic development (how the application of science and technology to traditional agriculture is affecting rural agricultural development", *Economic Research Journal*, 18 (June 1971), 4-12.
- DALRYMPLE, DANA. "Multiple cropping in developing countries", *Development Digest*, 13:1 (January 1975), 71-96.
- DANDEKAR, V.M. "Agricultural growth with social justice in overpopulated countries", *Economic and Political Weekly*, 5:29-31 (July 1970), 1231-38.
- EVENSON, ROBERT. "The 'green revolution' in recent development experience", *American Journal of Agricultural Economics*, 56:2 (May 1974), 387-93.
- FISCHER, PETER HELGE. "Goal projections, utilization of means and points of concentration of effort in agricultural development projects", *Economics*, 8 (1973), 75-85.
- GITTINGER, J. PRICE. *Economic analysis of agricultural projects*. Washington, D.C., I.B.R.D., 1972.
- "Project: the cutting edge of development". Excerpted from *Economic analysis of agricultural projects*. (A World Bank Publication) Baltimore, John Hopkin University Press, 1972.
- GOTSCH, CARL H. "The green revolution and future developments of Pakistan's agriculture", In: *Rural development in Bangladesh and Pakistan*, edited by Robert D. Stevens and others. Honolulu, East-West Centre Book, 1976.
- GOTSCH, CARL H. "Relationships between technology, prices and income distribution in Pakistan's agriculture: some observations on the green revolution", In *Rural development in Bangladesh and Pakistan*, edited by Robert D. Stevens and others. Honolulu East-West Centre Book, 1976.
- GRIFFIN, KEITH. *The political economy of agrarian change: an essay on the green revolution*. London, Macmillan. 1974.
- GRIST, D.H. "Rice production in the past quarter of a century 1949-1974", *World Crops*, 26:5 (1974), 213-5.
- HAMID JAVED. "A review of the agricultural breakthrough in West Pakistan", *Punjab University Economist*, 8 (June 1970), 31-45.
- HANSEN, GARY E. "Indonesia's green revolution: the abandonment of a non-market strategy toward change", *Asian Survey*, 12-11 (November 1972), 932-46.

- HANSEN, GARY E. *Rural local government and agricultural development in Java Indonesia* Ithaca (N.Y.), Rural Development Committee, Centre for International Studies, Cornell University, 1974.
- HASEYAMA, TAKAHIKO. "Development of Asian agriculture and international co-operation in the coming decade", *Developing Economies*, 12:2 (June 1974), 101-22.
- HAYAMI, YUJIRO and V.W. RUTTAN. *Agricultural development: an international perspective*. Baltimore, John Hopkins, Press, 1971.
- HAYAMI, YUJIRO and V.W. RUTTAN. "Korean rice, Taiwan rice and Japanese agricultural stagnation: an economic consequence of colonialism", *Quarterly Journal of Economics* 84 (1970), 562-89.
- HOLLOWAY, RONALD. "Agriculture in Ceylon", *Eastern World*, 25 (July-August 1971), 8-10.
- HONMA, AKIO. *Agriculture in Japan*. Tokyo, Japan FAO Association, 1971.
- HUNTER, GUY. "Management and self-management in agricultural development", *ODI Review*, 2 (1975), 53-65.
- INDIAN SOCIETY OF AGRICULTURAL ECONOMICS. *Comparative experience of agricultural development in developing countries of Asia and the South East since world war II: papers and proceedings of the International Seminar held at New Delhi, October 25-28, 1971*. Bombay, ISAE, 1972.
- INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. *Agriculture: sector working paper*. Washington, D C., World Bank, 1972.
- JACOBY, ERICH H. "Structural changes in third world agriculture as a result of neo-capitalistic developments", *Developing Economies*, 12:3 (September 1974), 201-13.
- JIRO, LINUMA. "The curious crisis in Japanese agriculture", *Japan Quarterly*, 21:4 (October-December 1974), 341-8.
- KAHNERT, F. and others. *Agriculture and related industries in Pakistan*. Paris, OECD Development Centre, 1970.
- KAWANO, SHIGETO. "Impeding factors in the adjustment of Japan's agriculture", *Developing Economies*, 11:1 (March 1973), 3-22.
- KOPPEL, BRUCE. "Sustaining the green revolution in the Philippines: how many diffusion curves", *Asian Survey*, 16:4 (April 1976), 355-63.

- LEWAS, JOSE M. "Agricultural diversification and development: the Philippine view point", *SEADAG Papers*, (6/8 January 1971) 1-21.
- LEHMANN, A D. (ed). *Agrarian reform and agrarian reformism*. London, Faber, 1974.
- LEWIS, DIANE K. "Rules for agrarian change: Negri Sembilan Malayas and agricultural innovations", *Journal of South East Asian Studies*, 7:1 (March 1976), 74-91.
- LOWDERMILK, MAX K. and LESLIE NULTY. "The green revolution in West Pakistan: implications of technological change", *International Development Review*, 4:4(1973), 28-32.
- MAHAJAN, V.S. "Kazushi Ohkawa revisited: some aspects of the turning-point in Japanese agriculture and lessons for developing countries". *Social Science Research Journal*, 1:2-3 (July-December 1976), 9-20.
- MARSTRAND, PAULINE K. and K.L.R. PAVITT. "The agricultural subsystem". In: *Thinking about the future: a critique of the limits to growth*, edited by H.S.D. Cole others. London, Chatto and Windus, 1973.
- MELLOR, JOHN W. "Accelerated growth in agricultural production and the intersectoral transfer of resources", *Economic Development and Cultural Change*, 22:1 (October 1973), 1-16.
- NEWBERY, D.M.G. *The choice of contract in peasant agriculture: paper read at the conference on Agriculture in development Theory*. (Mimeo). Bellagio, May 1973.
- NULTY, LESTIC. *The green revolution in West Pakistan: implications of technological change*. New York, Praeger, 1972.
- OKITA, SABURO and KURINO TAKASE. *Doubling rice production programme in Asia*. (Mimeo). Overseas Economic Cooperation Fund, 1976.
- OOMMEN, T.K. "Green revolution and agrarian conflict", *Economic and Political Weekly*, 6:26 (26 June 1971), A-99-103.
- PAIGE, JEFFERY M. *Agrarian revolution: social movements and export agriculture in the underdeveloped world*. New York Free Press, 1975.
- PALMER, INGRID. *The new rice in monsoon Asia* (Mimeo). New York, United Nations Research Institute for Social Development, 1974.
- POLEMAN, THOMAS T. and DONALD K. FREEBRAIN (eds). *Food, population and employment: the impact of the green revolution*. New York, Praeger, 1973.

- QUADEN, GUY. "Green revolution?", *Annals of Public and Cooperative Economy*, 43:1 (January-March 1972), 27-36.
- RANGASWAMI, G. "South Korea's achievements in agriculture". *Eastern Economist*, 68:3 (21 Jan. 1977), 95-7.
- RICHARDS, P. and E. STOUTJESDIJK. *Agriculture in Ceylon until 1975*. Paris, Organization for Economic Cooperation and Development, 1975.
- SAITO, KAZUO. "On the green revolution", *Developing Economies*, 9:1 (March 1971), 16-30.
- SEN, SUDHIR. *A richer harvest: new horizons for developing countries*. New Delhi, Tata McGraw-Hill, 1974.
- SILCOCK, T.H. *Economic development of Thai agriculture*, Canberra, Australian National University Press, 1970.
- SINHA, R.P. "The Chinese agricultural experiment: a hope for the future". *China Report*, 10:5-6 (September-December 1974), 108-13.
- SIVALINGAM, G. "The relationship between style and productivity in two agricultural re-development schemes in W. Malaysia", *Philippine Journal of Public Administration*, 19:3 (July 1975), 209-24.
- STAVIS, BENEDICT. *Making green revolution: the politics of agricultural development in China*. Ithaca, N.Y., Rural Development Committee, Centre for International Studies, Cornell University, 1974.
- "STRATEGIES for agricultural development", *Economic Bulletin for Asia and Far East*, 20:4 (March 1970), 9-52.
- THOMPSON, KENNETH W. "The green revolution: leadership and partnership in agriculture", *Review of Politics*, 34:2. (April 1972), 174-89.
- VICHADIST, SIDHIPHOL. "Agricultural diversification in Thailand", *Monthly Review*, 13 (November 1973), 511-22.
- WEINHOLD, H. *On social transformation of agriculture*. (Mimeo). University of Dares Salam, 1972.

AGRICULTURAL MARKETING AND FOOD SUPPLY

- BROWN, C.P. "Rice price stabilization and support in Malaysia", *Developing Economies*, 11:2 (June 1973), 164-83.
- CANTO, RENATO G. "Agricultural marketing in the Philippines: problems and prospects", *Economic Research Journal*, 17 (June 1970), 21-33.

- DOW, THOMAS E. "World population and food needs tomorrow", *Current History*, 68:406 (June 1975), 262-64.
- FOOD AND AGRICULTURE ORGANIZATION. *Things to come: the world food crisis the way out*. Rome, FAO, 1974.
- GIDDINGS, PHILIP. "Parliament, boards and autonomy: the case of agricultural marketing boards", *Public Administration* (U.K.), 53:4 (Winter 1978), 383-401.
- KUAN-I CHEN and ROBERT T. TSUCHIGANE. "An assessment of China's foodgrain supplies in 1980", *Asian Survey*, 16:10 (October 1976), 931-47.
- LORENZL, GUNTER. "Marketing and agricultural development", *Economics*, 8, 1973), 7-19.
- MEARS, LEON A. and TERESA L. ANDEN. "Rice price policy in the Philippines", *Development Digest*, 14:1 (January 1976), 106 12.
- PEDEREN, J. R. *Status of grain storage in developing countries*. Manhattan (Kansas), Food and Food Grain Institute, 1976.
- SANDERSON, FRED H. "The world food problem: possibilities of international action", *Current History*, 68:406 (June 1975), 265-70.
- SIMANTOV, A. "What can be learned from recent difficulties in agricultural marketing?", *OECD Observer*, 68 (February 1974), 6 12.
- TURVEY, RALPH and ERIC COOK. "Government procurement and price support of agricultural commodities: a case study of Pakistan", *Oxford Economic Papers* (New Series), 28:1 (March 1976), 102-17.

INDIA

AGRICULTURE (GENERAL)

- ACHARYA, S.K. "Agriculture in Meghalaya, Mizoram and Mikir and North Kachar Hills", *Artha Vijnana*, 16:1 (March 1974), 50-76.
- BANAJI, JAIRUS. "Mode of production in Indian agriculture", *Economic and Political Weekly*, 8:14 (7 April 1973), 679-83.
- BETEILLE, ANDRE. *Studies in agrarian socialist structure*. Delhi, Oxford University Press, 1974.
- BHARDWAJ, KRISHNA. *Production conditions in Indian agriculture*. London, Cambridge University Press, 1974.
- CHAKRAVARTY, S. "Agrarian structure, economic growth and national welfare", *Journal of the National Academy of Administration*, 17:3 (Autumn 1972), 486-93.
- CLARK, COLIN. "Agriculture and economic growth", *Public Affairs*, 19:4 (April 1975), 82-8.
- DAGLI, VADILAL (ed.). *A regional profile of Indian agriculture*. Bombay, Vora, 1974.
- DASGUPTA, AJIT K. *Agriculture and economic development in India*. New Delhi, Associated Publishing House, 1973.
- GAIKWAD, V.R. "Training and research needs for agricultural management", *Indian Journal of Public Administration*, 20:1 (January-March 1974), 56-72.
- HAQUE, S.M.S. and K.N. SINGH. "Distortion of agricultural information", *Indian Journal of Social Work*, 33:3 (October 1972), 235-41.
- HATI, ASHOK KUMAR and ASHOK RUDRA. "Calculation of efficiency indices of farmers: a numerical exercise", *Economic and Political Weekly*, (31 March 1973), A-17-20.
- INDIA. DIRECTORATE OF ECONOMICS AND STATISTICS. *Indian agriculture in brief*. 14th ed. Delhi, Controller of Publications, 1975.

- JAKHADE, V.M. and M.V GADGIL. "Investment in agriculture: a cost-benefit analysis: reply", *Economic and Political Weekly*, 6:15 (10 April 1971), 802-4.
- JASBIR SINGH. *An Agriculture atlas of India: A geographical analysis*. Kurukshetra, Vishal Publications, 1974.
- KAHLON, A.S. "Diversion of agriculture", *Commerce*, 125: 3198 (19 August 1972), 32-6.
- MAMORIA, C.B. *Agricultural problems in India*. 8th ed. Allahabad, Kitab Mahal, 1976.
- MICHIE, BARRY H. "Variations in economic behaviour and the green revolution: an anthropological perspective", *Economic and Political Weekly*, 8:26 (30 June 1973), A-67-75.
- MIRCHANDANI, G.G. (ed.). *Aspects of Agriculture in India*. Bombay, Allied, 1975.
- PILLAI, G. VISWANATHAN. "Role of agriculture in economic development", *Mainstream*, 11:6 (7 October 1972), 17-19.
- RAJU, K. NEELADRI. "The influence of education on farm efficiency", *Community Development and Panchayati Raj Digest*, 7:3 (January 1976), 103-8.
- RAKESH MOHAN. "Contribution of research and extension to productivity change in Indian agriculture", *Economic and Political Weekly*, 9:39 (28 September 1974), A-97-104.
- RAKESH MOHAN and Others. "The Indian agricultural research system", *Economic and Political Weekly*, 8:13 (31 March 1973), A-21-6.
- RAO, S.K. "Measurement of unemployment in rural India", *Economic and Political Weekly*, 10:29 (29 September 1973), A-78-90.
- RATNAWAT, B.P. *Agricultural manpower and economic development (with special study of Madhya Pradesh)*. Bombay, Popular Prakashan, 1975.
- SAU, RANJIT. "On the essence and manifestation of capitalism in Indian agriculture", *Economic and Political Weekly*, 8:13 (31 March 1973), A-27-30.
- SHARMA, PREM S. *Agricultural regionalisation of India*. Delhi, New Height Publishers, 1973.
- SHARMA, RAJENDRA PRASAD. "Pattern of agriculture among the tribals of Madhya Pradesh", *Geographical Review of India*. 33:3 (September 1971), 175-82.

SINHA SACHCHIDANAND. *The bitter harvest: agriculture and economic crisis*. New Delhi, Manas, 1975.

SWAMINATHAN, M.S. "Perspectives in agriculture", *Seminar*, (January 1973), p. 63-6.

AGRICULTURAL POLICY AND PLANNING

ABEL, MARTIN E. and K. WILLIAM EASTER. "Agricultural planning and programme evaluation: focus on regional restraints", *Economic and Political Weekly*, 6:30-31 (Special Number, July 1971), 1577-96.

BANSIL, P.C. *Agricultural planning for 700 millions*. Bombay, Lalvani, 1971.

BAWA, D.S. *Rural project planning: methodology and case studies*. New Delhi, D.S. Bawa, 1975.

BHATIA, B.M. *India's food problem and policy since independence*. Bombay, Somaiya, 1970.

DAMS, THEODOR. "Integration of agricultural projects: task of development policy", *Social Action*, 23:3 (July-September 1973), 259-76.

DANIEL, A.V. *Strategy for agricultural development*. Bombay, Vora, 1976.

FRANDA, MARCUS F. "Policy responses to India's green revolution", *AUFS (American Universities Field Staff) Reports* 16 (June 1972).

GADGIL, D.R. "Planning for agricultural development in India". In: *Planning and economic policy in India*. edited by D.R. Gadgil. Poona, Gokhale Institute of Politics and Economics, 1972.

GAIKWAD, V.R. *Small farmers: state policy and programme implementation*. Hyderabad, National Institute of Community Development, 1971.

HANUMANTHA RAO, C.H. "Socio-political factors and agricultural policies". *Economic and Political Weekly*, 9:32-4 (Special Number August 1974), 1285-92.

HAQUE, T. "Planning for agricultural development", *Mainstream*, 12:33 (13 April, 1973), 15-6.

HUNTER, GUY and ANTHONY F. BOTTERALL (eds.). *Serving the small farmer: policy choices in Indian agricultural development*. Hyderabad, National Institute of Community Development, 1974.

- JHA, DURGA NAND. *Planning and agricultural development (a study with reference to Bihar)*. Delhi, S. Chand, 1974.
- JODHA, N.S. "Land policies of Rajasthan: some neglected aspects". *Economic and Political Weekly*, 5:26 (27 June 1970) A-81-3.
- JODHA, N.S. "A strategy for dry land agriculture", *Economic and Political Weekly*, 7:13 (25 March 1972), A-7-12.
- JOSHI, P.C. "Agricultural policy", *Seminar* (July 1971), 21-5.
- KALRA, O.P. *Agricultural policy in India*. Bombay, Popular Prakashan, 1973.
- KANAVI, B.B. and N.S. CHACHADI. "The new agricultural strategy and small farmers", *Journal of the Karnatak University Social Sciences*, 11 (1975), 169-79.
- KANUNGO, K. and J.S. SHARMA. "Regional agricultural development planning in India", *Cooperative News Digest*, 26:3 (March 1975), 34-8.
- LAL, M.B. "U.P. farming strategy: retreat from the green revolution", *Statesman* (15 April 1974), 6.
- MATHUR, S.C. *Agricultural policy and food self-sufficiency*. New Delhi, Associated Publishing House, 1970.
- MEHTA, UDAY B. *Agrarian strategy in India*. Bombay, Vora, 1975.
- MINHAS, B.S. *Planning and the poor*. New Delhi, S. Chand, 1974.
- MISHRA, G.P. "Planning in agriculture backwardness", *Eastern Economist*, (Annual Number 1971: 25 December 1970), 1126-36.
- NAGESWARA RAO, A. and M. MEENAKSHI BAI. "Inter-state disparity in agriculture", *Eastern Economist*, 58:10 (10 March 1972), 384-6.
- OOMMEN, T.K. "Agrarian legislations and movements as sources of change: the case of Kerala", *Economic and Political Weekly*, 10:40 (4 October 1974), 1571-84.
- QURAIISHI, M.A. "Agricultural development policy", *Agricultural Situation in India*, 29:2 (March 1975) 871-4.
- RAO, A.R. and I.J. SINGH. "Rational land use for self-sufficiency in food", *Eastern Economist*, 63:20 (15 November 1974), 885-8.
- "REGIONAL agricultural development planning: problems and prospects", *Cooperative News Digest*, 26:3 (March 1975), 38-41.

- SAIN, K. "Technique of planning for agricultural development", *Southern Economist*, (1 May 1975) 56a-7.
- SARMA, J.S. "Agricultural policy in India", *Indian Journal of Agricultural Economics*, 29:1 (Jan-March 1974), 1-15.
- A STRATEGY for agriculture", *States*, 6:12 (12 April 1975), 5-12.
- SUBRAMANIAM, C. "Farm planning must not gamble on rains", *Eastern Economist*, 63:14 (4 October 1974), 600-3.
- SUBRAMANIAM, C. "Role of agricultural commission", *Intensive Agriculture*, 7:10 (December 1970), 8-11.
- SWAMINATHAN, M.S. "Agricultural strategies for India 1973-2000", *Monthly Commentary on Indian Economic Conditions*, 14:7 (February 1973), 17-22.
- TEWARI, R.N. *Agricultural planning and co-operatives*. Delhi, S. Chand, 1972.
- VYAS, V.S. and S.C. BANDYOPADHYAY. "National food policy in the framework of a national food budget", *Economic and Political Weekly*, 10:13 (29 March 1975), A-2-13.
- WADHA, K.L. "Need for change in our farm policy". *Young Indian*, 3:44 (11 October 1973), 18-20

LAND TENURE/REFORM

- ABHIMANYU SINGH. "The protection of under-raiyats in Bihar". *Yojana*, 20:21 (15-31 December 1976) 43-6.
- APPU, P.S. "Land reform for agricultural growth", *Community Development and Panchayati Raj Digest*, 5:3 (January 1974), 105-8.
- APPU, P.S. "Tenancy reform in India", *Economic and Political Weekly*, 10:33-5 (Special Number: August 1975), 1339-76.
- APPU, P.S. "Tenancy reforms", *Financial Express*, (19 August 1975), 4; (20 August 1975), 4.
- BARDHAN, PRANAB. "Trends in land relations: a note", *Economic and Political Weekly*, 5:3-5 (January 1970), 261 7.
- BARDHAN, PRANAB. "Variations in extent and forms of agricultural tenancy", *Economic and Political Weekly*, 11:37 (11 September 1976), p. 1505 12; 11:38 (18 September 1976), p. 1541-6.

- BERGMANN, THEODOR. "Land reform and the 'green revolution' in India", *Economic Rurale*, 88 (1971), 15-25.
- BHALLA, SHEILA. "Changes in acreage and tenure structure of land holdings in Haryana, 1962-72", *Economic and Political Weekly*, 12:13, (26 March 1977), p. A-2-15.
- BHARDWAJ, KRISHNA. "Notes on farm size and productivity", *Economic and Political Weekly*, 9:13 (30 March 1974), A-11-24.
- BHARADWAJ, KRISHNA and P.K. DAS. "Tenural conditions and mode of exploitation: a study of some villages in Orissa", *Economic and Political Weekly*, 10:5-7 (February 1975), 291-40.
- BHARDWAJ, KRISHNA and P.K. DAS. "Tenurial conditions and mode of exploitation—study of some villages in Orissa: further notes", *Economic and Political Weekly*, 10:25-26 (21, 28 June 1975), A-49-55.
- BHATIA, B.M. "Agricultural reform: a community of peasant proprietors", *Statesman* (4 March 1976), 6.
- BHATIA, B.M. "Scope of land reform: raising agricultural productivity", *Statesman*, (4 September 1975), 4.
- BHATTACHARYA, N. and G.R. SAINI. "Farm size and productivity: a fresh look", *Economic and Political Weekly*, 7:26 (24 June 1972), A-63-72.
- BIRPAL SINGH and R. SWARUP. "Holdings and joint family system: a case study of H.P.", *Economic Times*, (31 December 1975), 5.
- CHANDRAS, G.S. "A review of land reform in non-arable lands in India with special references to the forest lands", *Artha Vijnana*, 12:1-2 (March-June 1970), 237-69.
- CHARYULU, U.V.N. "Some aspects of agrarian reform in Jammu and Kashmir", *Community Development and Panchayati Raj Digest*, 6:4 (April 1975), 190-6.
- CHATTOPADHYAY, SUHAS. "On the class nature of land reforms in India since independence", *Social Scientist*, 2:4 (November 1973), 3-24.
- DANTWALA, M.L. and C.H. SHAH. "Pre-reform and post-reform agrarian structure", *Indian Journal of Agricultural Economics*, 26:3 (July-September 1977), 183-200.
- "DATA on land holdings in India", *Artha Vijnana*, 12:1-2 (March-June 1970), 300-29.
- DATT, RUDDAR. "Land reforms and planning process in India", *Mainstream*, 12:40-41 (8 June 1974), 17-20.

- DESHPANDE, V.D. "History of tenancy relations in the state of Maharashtra since 1900", *Artha Vijnana*, 12:1-2 (March-June 1970), 193-236.
- DWIVEDI, HARENDRANATH and ASHOK RUDRA. "Economic effects of tenancy: some further negative results", *Economic and Political Weekly*, 8:29 (21 July 1973), 1291-4.
- FARMER, B.H. *Agricultural colonization in India since independence*. London, Oxford University Press, 1974.
- GEORGE, P.T. "The evolution of land tenures in India", *Artha Vijnana*, 12:1-2 (March-June 1970), 1-15.
- GEORGE, P.T. "Land reforms in Andhra Pradesh—some problems of implementation of tenancy reforms", *Artha Vijnana*, 12:4 (December 1970), 467-506.
- GEORGE, P.T. "Land system and laws in Mysore State", *Artha Vijnana*, 12:1-2 (March-June 1970), 117-92.
- GEORGE, P.T. "Land system and legislation in Madras", *Artha Vijnana*, 12:1-2 (March-June 1970), 16-74.
- GEORGE, P.T. *Terminology in Indian land reforms*. Poona, Gokhale Institute of Politics and Economics, 1972.
- GUJARAT. DIRECTORATE OF EVALUATION. *Evaluation study of impact of land reform measures in Gujarat State*. Gandhinagar, The Directorate, 1976.
- HANUMANTHA RAO, C.H. "Ceiling on agricultural land holding: its economic rationale", *Economic and Political Weekly*, 7:26 (24 June 1971), A-59-62.
- HANUMANTHA RAO, C.H. "Farm size and credit policy", *Economic and Political Weekly*, 5:52 (26 December 1970), A-157-62.
- HAZARAY, M.R. "Land reform in India", *Inter Economics*, (August 1970), 256-7.
- JAIN, HEMCHAND. "Land reform in Madhya Pradesh", *Eastern Economist*, 61:12 (21 September 1973), 543-6.
- JANNUZI, F. THOMASSON. *Agrarian crisis in India: the case of Bihar*. New Delhi, Orient Longman, 1974.
- JOSHI, P.C. "Agrarian structure and the rural poor: review of perspectives", *Social Change*, 4:3 and 4 (September-December 1974), 4-11.
- JOSHI, P.C. *Land reforms in India: trends and perspectives*. New Delhi, Allied, 1975.

- KASAR, D.V. "Effects of tenancy abolition on the holdings of farmers: a case study in Western Maharashtra", *Indian Journal of Agricultural Economics*, 30:4 (October-December 1975), 103-9.
- KASAR, D.V. and T.K.T. ACHARYA. "Effects of land reform on mode of agriculture", *Eastern Economist*, 66:24 (11 June 1976), 1273-4.
- KHUSRO, A.M. *The Economics of land reform and farm size in India*, Madras, Macmillan, 1973.
- KOSHY, V.C. "Land reforms in India under the plans", *Social Scientist*, 2:12 (July 1974), 43-61.
- KULKARNI, D.K. "Administrative aspects of the implementation of land reforms in Maharashtra", *Public Administrator*, (February 1973), 79-91.
- LAKSHMAN, T.K. and M.S. KANTI. "Controversies on ceilings on land holdings in India", *Arthaniti*, 15:1-2 (January-July 1972), 105-18.
- LAL, M.B. "The major consequences of the decision on land ceilings", *Capital*, 169:4225 (3 August 1972), 177-8.
- "LAND ceiling and tenancy reforms: syndicate report", *Journal of the Lal Bahadur Shastri National Academy of Administration*, 22:3 (Autumn 1975), 1073-94.
- "LAND reforms in a sociological perspective (contributors: B.K. Roy Burman, Yogendra Singh, T.K. Oommen, P.C. Joshi and S.C. Dubey)", *India International Centre Quarterly*, 1:1 (October 1974), 51-68.
- LAXMINARAYAN, H. and S.S. TYAGI. "Some aspects of size-distribution of agricultural holdings", *Economic and Political Weekly*, 11:41 (16 October 1976), p. 1637-40.
- LAXMINARAYAN, H. and S.S. TYAGI. "Tenancy: extent and inter-state variations", *Economic and Political Weekly*, 12:22 (28 May 1977), p.880-2.
- MAHARASHTRA, LAND REFORMS EVALUATION COMMITTEE, 1968. *Report*. Bombay, Director of Printing and Stationery, 1972.
- MASCARENHAS, R.C. *Land reforms in India: some problems of implementation*. Calcutta, Indian Institute of Management, 1975.
- MAVLANKAR, N.A. "Economics of land consolidation in India: a case study reviewed", *Artha Vijnana*, 13:4 (December 1971), 452-7.

- MICHIE, ARUNA N. "Land reforms policies in India: a comparative perspective", *Political Science Review*, 13:1-4 (January-December 1974), 278-304.
- MINHAS, B.S. "Rural poverty, land redistribution and development", *Indian Economic Review*, 5:1 (April 1970), 97-129.
- MISHRA, G.P. Planning and land reform policy in India", *Economic Affairs*, 18:5 (May 1973), 217-33.
- MISHRA, G.P. *Some aspects of change in agrarian structure*. New Delhi, Sterling, 1977.
- MISRA, SHRIDHAR. "Land reforms and the structure of holdings in U.P.", *Indian Journal of Economics*, 44:4 (April 1974), 447-59.
- MONTGOMERY, JOHN D. "Administrative systems and output measures: a comparative study of land reforms", *Indian Administrative and Management Review*, 4:2 (April 1974), 1-19.
- MUKHERJEE, KARUNAMOY. "Some short-term and long-term problems of land reforms in West Bengal", *Economic Studies*, 15:10 (April 1975), 469-68.
- MUKHOPADHYAY, ARUN K. "Effects of distribution of surplus lands on agrarian structure and agriculture: a case study in West Bengal", *Community Development and Panchayati Raj Digest*, 7:2 (July 1975), 14-18.
- MULLA, G.R. "Government lands for cultivation: a case study of Maharashtra", *Economic and Political Weekly*, 8:39 (29 September 1973), A-107-10.
- MURDIA, RATNA. "Land allotment and land alienation policies and programmes for scheduled castes and tribes", *Economic and Political Weekly*, 10:32 (9 August 1975), 1205-14.
- NADKARNI, M.V. "Tenants from the dominant class: a developing contradiction in land reforms", *Economic and Political Weekly*, 11:52 (25 December 1976), p. A-137-46.
- NANEKAR, K.R. and S.V. KHANDEWALE. *Bhoodan and the landless*. Bombay, Popular Prakashan, 1973.
- NARAYANA RAO, K.V. "Land reforms in Andhra Pradesh: some aspects of laws on ceiling", *Community Development and Panchayati Raj Digest*, 7:3 (January 1976), 95-102.
- NEALE, W.C. *Land reform in Uttar Pradesh, India*. Washington, D.C., U.S. AID, 1970.

- OJHA, G. *Land problems and post independence land reforms*. New Delhi, Sultan Chand, 1976.
- OOMMEN, M.A. *A study on lands reforms in Kerala*. New Delhi, Oxford and IBH, 1975.
- OOMMEN, N.K. *Charisma, stability and change: an analysis of Bhoodan-Gramdhan in India*. New Delhi, Thomson Press, 1972.
- PANDE, RAM. *Agrarian movement in Rajasthan*. Delhi, University Publishers, 1974.
- PARTHASARATHY, G. and D.S. PRASAD. "Responses to, and impact of, H H V. rice recording to land size and tenure in a delta village, Andhra Pradesh, India", *Developing Economics*, 12:2 (June 1974), 182-98.
- PATEL, G.D. *The land systems of Union Territories of India*. Anand, Charotar Book Stall, 1970.
- PATNAIK, UTSA. "Economics of farm size and farm scale: some assumptions re-examined", *Economic and Political Weekly*, 7:31-3 (Special Number: August 1972), 1163-24.
- PRASAD, K.N. "Abolition of rural poverty: an analysis of land reform in India", *Social Action*, 24: (January-March 1974), 1-24.
- PRASAD, PRADHAN H. "Agrarian unrest and economic change in rural Bihar: three case studies", *Economic and Political Weekly*, 10:24 (14 June 1975), 931-7.
- RAO, T.V.S. "Land legislation in Kerala State (1800-1960)", *Artha Vijnana*, 12:1-2 (March-June 1970), 75-116.
- RAO, V.M. "Two perspectives on redistribution of land", *Economic and Political Weekly*, 9:13 (30 March 1974), A2-10.
- RAO, V.M. "Village lease markets for agricultural land: some approaches for analysis", *Economic and Political Weekly*, 9:26 (29 June 1974), A-55-62.
- RIDKER, R.G. *Land reform and rural poverty in India*. Washington, D.C., U.S. AID, 1970.
- SACHCHIDANANDA. "Land reform in tribal areas", *Young Indian*, 5:8 (6 November 1975), 4-6.
- SARKAR, B.K. "Land reforms: recent trends in India", *Voluntary Action*, 18:5 and 6 (May-June 1976), 74-8.
- SAVUR, MANORAMA. "Village agrarian relations: Maharashtra case study, *Social Scientist*, 5:1 (August 1976), p. 50-60.

- SHARMA, S.P. "Agrarian reforms and constitutional amendments in India: a historical critique", *Jaipur Law Journal*, 15:1 (1975), 95-109.
- SIDHU, B.S. *Land reform, welfare and economic growth*. Bombay, Vora, 1976.
- SONACHALAM, K.S. *Land reform and Tamil Nadu: evaluation of implementation*. New Delhi, Oxford and IBH, 1970.
- STOKES, ERIC, "The structure of landholdings in Uttar Pradesh, 1860-1948", *Indian Economic and Social History Review*, 12:2 (April-June 1975), 115-32.
- THORNER, DANIEL. *The agrarian prospect in India*. New Delhi, Allied, 1976.
- UPPAL, J.S. "Implementation of land reform legislation in two Indian villages", *Development Digest*, 8:2 (April 1970), 23-8.
- VARGHESE, T.C. *Agrarian change and economic consequences. land tenures in Kerala, 1850-1960*. Bombay, Allied, 1970.
- VASUDEVA RAO, D. "Farm holdings: economics of size", *Eastern Economist*, 63:18 (1 November 1974), 791-3.
- VOHRA, B.B. "A Charter for the land", *Economic and Political Weekly*, 3:13 (31 March 1973), A-2-16.
- VOHRA, B.B. "Land management problems in India: a macro view", *Indian Administrative Management Review*, 7:4 (October-December 1975), 6-8.
- VYAS, V.S. "Structural change in agriculture and the small farm sector", *Economic and Political Weekly*, 11:1-2 (10 January 1976), 24-32.
- WUNDERLICH, G. *Land reform in India*. Washington, D.C., U.S. AID, 1970.
- ZAHEER, M. "Measures of land reform: consolidation of holdings in India", *Behavioural Sciences and Community Development*, 9:2 (September 1975) 87-121.

AGRICULTURAL ADMINISTRATION

- AURORA, D.S. "Modernizing agricultural management", *Development Policy and Administrative Review*, 1:2 (July-December 1975), 131-5.
- BARNABAS, A.P. and DONALD C. PELZ. *Administering agricultural development (co-ordination, initiative, and communication in three north Indian States)* New Delhi, Indian Institute of Public Administration, 1970.

- BHATIA, V.S. "Introducing management technology in agriculture", *Capital* (Annual Number 1974:30 January 1975), 101-3.
- CHATTERJEE, BIBHAS. "Improving agriculture through better management", *Capital*, 174:4359 (17 April 1975), 566-7.
- DE, CHARU CHANDRA. "Role of statistics in modernising agriculture", *Capital* 174:4357 (3 April 1975), 499-500.
- DUBHASHI, P.R. *Rural development administration in India*. Bombay, Popular Prakashan, 1970.
- HALDIPUR, RAMDAS N. "Elected bodies and agricultural development in India", *Indian Journal of Public Administration*, 22:4 (October-December 1976), 621-32.
- HOOJA, B. "Agricultural administration in Andhra Pradesh", *Administrative Change*, 2:2 (January-June 1975), 185-95.
- HUNTER, GUY. *The administration of the agricultural development: lessons from India*. London, Oxford University Press, 1970.
- JOHL, S.S. and T.R. KAPUR. *Fundamentals of farm business management*. Ludhiana, Kalyani Publishers, 1973.
- KHAN, WAHEEDUDDIN. "Management system for agricultural development: (two case studies—the Indian Leaf Tobacco Development Co. Ltd and The Rubber Board)", *Community Development and Panchayati Raj Digest*. 6:2 (October 1974), 65-8.
- MATHUR, J.C. *Agricultural development: role of the collector*. New Delhi, Training Division, Ministry of Home Affairs, 1970.
- MATHUR, J.C. "Issue from the point of view of agricultural administration", *Voluntary Action*, 13:6 (November-December 1971), 5-8.
- MATHUR, KULDEEP. "Development by committee: a study of the district agricultural production committee in Rajasthan", *Prashasnika*, 1:1 (January-March 1972), 55-71.
- MUTTALIB, M.A. *Development administration in rural government for agricultural production*. Hyderabad, Osmania University, 1973.
- PAWAR, M.S. "Organisation and management of Indian agriculture", *Cooperative Perspective*, 10:2 (July-September 1975), 4-6.

- PRASAD, AWADHESH *The block development officer: a portrait of bureaucracy in India*. Patna, Associated Book Agency, 1976.
- PURI, S.S. "Union-state relationship in agricultural administration", *Indian Journal of Public Administration*, 16:3 (July-September 1970), 352-60.
- RAY, AMAL. *Organisational aspects of rural development: taluk-level administration in an Indian State*. Calcutta, World Press, 1976.
- REDDY, T.V.R. and I.C. PATEL. "Characteristics of agricultural extension officers in Gujarat", *Indian Journal of Social Works*, 32:1 (January 1972), 429-33.
- ROY, N.K. "Study of job satisfaction of block agricultural officers, *Farm and Factory*, 9:1-3 (November-December 1974 and January 1975), 13-15.
- SARVESWARA RAO, B. and T.V.S. RAO. "Institutional framework for agricultural development: a comparative study of four selected blocks in the East Godavari district, Andhra Pradesh", *Community Development and Panchayati Raj Digest*, 6:3 (January 1975), 151-7.
- SESHADRI, K. *Agricultural administration in Andhra Pradesh: a study of the process of implementation of intensive agricultural development programmes*. Bombay, Popular Prakashan, 1974.
- SHENOI, P.V. *Agricultural development in India: a new strategy in management*, Delhi, Vikas, 1975.
- SHRI RAM CENTRE FOR INDUSTRIAL RELATIONS. *Seminar on policy perspectives for agricultural labour in India*. Delhi, The Centre, 1970.
- SINGH, D.P. "Administrative pattern for new agriculture", *Commerce*, 121:3104 (31 October 1970), 954-5.
- SINGH, K.N. and CHAMALA SHANKARIAH. "Communication strategy with special reference to extension work in India", *Interdiscipline*, 7:3 (Autumn 1970), 284-8.
- SINGH, K.N. and others. *Research in extension education for accelerating development process*. New Delhi, Indian Agricultural Research Institute, 1970.
- SINGH, S.P. *Centre-state relations in agricultural development*. Delhi, Vikas, 1973.
- SINHA, P.R.R. and S.P. JAIN. "Panchayati raj and agricultural labour", *Community Development and Panchayati Raj Digest*, 6:2 (October 1974), 69-79.

- SIVARAMAN, B. *Issues in the implementation of agricultural programmes*—(Mimeo). New Delhi, Indian Institute of Public Administration, 1976.
- SIVARAMAN, B. "Management of agriculture", *Indian Management*, 14:9 (September 1975), 17-19.
- SUDAN, M.L. Organisation—"the vital input in agriculture, *Journal of the National Academy of Administration*, 17:2 (June 1972), 334-43.
- VASANT, S.S. "Time utilisation of agricultural personnel in Maharashtra", *Manpower Journal*, 6:3-4 (October 1970-March 1971) 95-121.

FARM LABOUR AND PEASANTS' COOPERATION

- AGGARWAL, PARTAP C. *Green revolution and labour: a study in Ludhiana*. New Delhi, Shri Ram Centre for Industrial Relations and Human Resources, 1973.
- AIYASAMY, P.K. and others. "Economic appraisal of pattern of labour utilisation in different tracts of Tamil Nadu", *Southern Economic Review*, 5:1 (July 1975) 31-49.
- ALEXANDER, K.C. "Genesis of agrarian tension in Thanjavur: findings of a research study", *Economic and Political Weekly*, 10:49 (6 December 1975), 1881-6.
- ASTHANA, R.S. and others. "Impact of improved agricultural technology on wages and earnings of farm labour in Kanpur district (U.P.): a case study", *Labour Bulletin*, 34:12 (December 1974), 1-5.
- BARDHAN, KALPANA "Factor affecting wage rates for agricultural labour", *Economic and Political Weekly*, 8:26 (30 June 1973), A:56-64.
- BHAGAT, M.G. and SUBHACHARI DASGUPTA. *Developing advasis and small farmers*. Bombay, National Institute of Bank Management, 1975.
- BHAGVATI, B. "Problems of agricultural labour and their organisation", *Indian Worker*, 21:1 (2 October 1972,) 5, 35.
- BILLINGS, MARTIN H. and ARJAN SINGH, "Mechanisation and wheat revolution: effects on female labour in Punjab", *Economic and Political Weekly*, 5:52 (26 December 1970), A-169-74.
- BREMAN, JAN. *Patronage and exploitation: changing agrarian relations in South Gujarat, India*. Berkeley, University of California Press, 1974.

- CHATTOPADHYAY, MANABENDU. "Wage rates of two groups of agricultural labourers", *Economic and Political Weekly*, 12:13 (26 March 1977), p.A-20-2.
- CHAUHAN, K.K.S. and others. *Small farmers: problems and possibilities of development: a study in Sangli district of Maharashtra State*. Amedabad, Indian Institute of Management, 1973.
- DESHPANDE, S.H. "A management problem in co-operative farms", *Economic and Political Weekly*, 5:19 (9 May 1970), 782-3.
- DHANAGARE, D.N. *Agrarian movement and Gandhian politics*. Agra, Institute of Social Sciences (Extension Lecture Series), Agra University, 1975.
- DIVAKARA RAO, G. "Agricultural labour: a diminishing force", *Artha Vijanan*, 15:3 (September 1973), 305-13.
- DUBHASHI, P.R. "The agricultural challenge of 1980: cooperation", *Cooperative Perspective*, 11:1 (April 1976), 7-13.
- H.D., "Agricultural wages in West Bengal: Arithmetic of rural poverty", *Economic and Political Weekly*, 8:50 (15 December 1973), 2208-10.
- JOHAR, R.S. and O.R. SHARMA. "Earnings of farm labour and marginal farmers: a comparative study", *Economic Times*, (18 May 1976), 5; (19 May 1976), 5.
- JOSE, A.V. "Trends in real wage rates of agricultural labourers", *Economic and Political Weekly*, 9:13 (30 March 1974), A-25-30.
- KARAM, SINGH. "Labour employment pattern in relation to farm size and level of mechanization on Punjab farms", *Manpower Journal*, 11:4 (January-March 1976), 71-84.
- MAHARAJ, R.N., A.N. DAS and K. GOPAL IYER. "Hypothesis regarding peasant movements and organisations in India", *Indian Worker*, 25:16 and 17 (24 January 1977), 45-53.
- MATHUR, KULDEEP. *Peasant organizations and rural development in India (Paper presented at Seminar on the Role of Rural Organizations in Rural Development, ACDA, Kuala Lumpur, June 1977)*. New Delhi, Indian Institute of Public Administration, 1977. (Mimeo).
- MITRA, ASHOK K. "Surplus labour in agriculture", *Economic and Political Weekly*, 11:28 (10 July 1976) 1041-7.
- MOHANAN, N. "Leadership in agricultural cooperative", *Eastern Economist*, 66:23 (4 June 1976), 1225-9.

- MUKHOPADHYAY, ARUN. "Problems of small and marginal farmers in drought-prone areas of India", *Economic Studies*, 15:172 (August-September (1974), 134-40.
- NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH. *Impact of mechanisation in agriculture on employment*. New Delhi, The Council, 1973.
- PANDEY, S.M. *Development of marginal farmers and agricultural labourers: a study of Mathura*. New Delhi, Shri Ram Centre for Industrial Relations and Human Resources, 1974.
- PARTHASARATHY, G. and G. DASARADHA RAMA RAO. "Employment and unemployment among rural labour households: a study of west Godavari District", *Economic and Political Weekly*, 8:52 (29 December 1973) A-118-32.
- PARTHASARATHY, G. and G. DASARADHA RAMA RAO. "Minimum wages legislation for agricultural labour: a review", *Economic and Political Weekly*, 10:39 (27 September 1975), A-76-88.
- PETHE, VASANT P. *Agricultural labour in India: problems and policy-decision*. Bombay, Vora, 1970.
- PRAKASA, RAO, M.S. and others. "Growth of agricultural labour in India", *Indian Journal of Labour Economics*, 16:4 (January 1974), 378-403.
- PRASAD, KEDARNATH. "Employment potential of higher productivity: the case of Indian agriculture", *Social Action*, 23:2 (April-June 1973), 117-36.
- PRASAD, V. and others. "A study on the pattern of wage payment earnings of landless agricultural labourers: a case study in Block Baccharawan, District Rai Bareli, U.P.", *Labour Bulletin*, 36:2 (February 1976), 1-5.
- RAGHAVULU, K.V.N. "Agricultural wage variations in Karnataka", *Community Development and Panchayati Raj Digest*, 7:4 (April 1976), 149-57.
- RAIKHY, P.S. and H.S. AULAKH. "Agricultural labour: assets, savings and debt position: case study of Amritsar district", *Economic Times*, (2 June 1976) 5; (3 June 1976), 4.
- RANGASWAMY, P. *India's changing farmers*. Allahabad, Kitab Mahal, 1972.
- PATNAWAT, B.P. *Agricultural manpower and economic development*. Bombay, Popular Prakashan, 1975.
- RESERVE BANK OF INDIA. *The small farmers (1967-69)—a field study*. Bombay, RBI, 1975.

- RESERVE BANK OF INDIA. *The small farmers development agencies (1972-73)—a field study*. Bombay, RBI, 1975.
- RUDRA, ASHOK and MADAN MOHAN MUKHOPADHYA, "Hiring of labour by poor peasants", *Economic and Political Weekly*, 11:1-2 (10 January 1976), 36-6.
- RUDRA, ASHOK and RAMDEV BISWAS. "Seasonality of employment in agriculture", *Economic and Political Weekly*, 8:39 (29 September 1973), A-91-100.
- SAIN, K. "Role of cooperation in green revolution—a moment for contemplation", *Indian Cooperative Review*, 11:2 (January 1974), 187-93.
- SARDAR PATEL UNIVERSITY. Agro-Economic Research Centre. *An assessment of cooperative farming societies in Gujarat and Rajasthan*. Vallabha Vidyanagar, the University, 1972.
- SHARMA, O.P. "Women on the farm front", *Economic Times*, (15 February 1976), 7.
- SINGH, M.L. "Labour utilisation and earnings of farm workers: a case study", *Southern Economic Review*, 2:1 (July 1972), 36-63.
- SINGH, R.I. and others. "Trend of agricultural wages in Uttar Pradesh", *Labour Bulletin*, 35:11 (November 1975), 1-4.
- SRIVASTAVA, R.S.L. "Productivity of human labour in agriculture and its mobility in rural labour market", *Indian Journal of Economics*, 52:206 (January 1972), 259-68.
- SUDAN, M.L. "SFDA and MFALA Ambala: some observations", *Journal of the Lal Bahadur Shastri National Academy of Administration*, 20:4 (Winter 1975), 1269-80.
- TADA, HIROKAZU. "Disintegration of the peasantry in India—some issues", *Developing Economies*, 13:1 (March 1975), 94-106.
- TALIB, B.D. and A. MAJID. "The small farmers of Punjab", *Economic and Political Weekly*, 11:26 (26 June 1976), A-42-6.

AGRICULTURAL INPUTS AND TECHNOLOGY

- ACHARYA, T.K.T. and others. "Girna irrigation project—benefit-cost analysis", *Economic Times*, (1 August 1975), 5.

- AIYAR, SWAMINATHAN S. "Revising fertiliser policy: case for a swing towards gas and naphtha", *Times of India*, (28 June 1975), 6.
- APPU, P.S. "The bamboo tubewell: a low cost device for exploiting ground water", *Economic and Political Weekly*, 9:26 (29 June 1974), A-63-5.
- ASOPA, V.N. and B.L. TRIPATHI. *Irrigation agriculture in Gujarat: problems and prospects*. (CMA Monograph No. 53). Ahmedabad, Indian Institute of Management, 1975.
- ATHAVALE, M.C. and K.G. SHARMA. "Supply of irrigation equipment: a case study of Indore district", *Economic Times*, (12 February 1976), 5.
- AURORA, G.S. and W. MOREHOUSE. "Dilemma of technological choice: the case of the small tractor", *Economic and Political Weekly*, 7:31-33 (August 1972), 1633-44.
- BHAJAN SINGH and others. "Fertilizers use and foodgrain production", *Agricultural Situation in India*, 31:3 (June 1976), 117-19.
- BHATIA, B.M. "Irrigation policy: extending benefits to small farmers", *Statesman*, (14 May 1976), 4.
- BHATIA, RAMESH and MEERA MEHTA. "Tubewell irrigation: analysis of some technical alternatives", *Economic and Political Weekly*, 10:52 (27 December 1975), A-111-19.
- BHATTACHARYA, SOURIN. "India's first private irrigation company", *Social Scientist*, 4:4 (October 1975), 35-55.
- BROEHL, WAYNE G. "The fertiliser distributor as change agent", *Economic and Political Weekly*, 8:52 (29 December 1973), A-157-63.
- CHATURVEDI, M.C. *Second India studies—water*. Delhi, Macmillan of India, 1976.
- CHOPRA, KUSUM. "Tractorisation and changes in factor inputs: a case study of Punjab", *Economic and Political Weekly*, 9:50 (14 December 1974), A-119-26.
- DAKSHINAMURTI, C. "Recent trends in water management", *Indian and Foreign Review*, 10:24 (15 September 1973), 17-18.
- DAKSHINAMURTI, C. and others. *Water resources and their utilisation in agriculture*. New Delhi, Indian Agricultural Research Institute, 1973.
- DASGUPTA, S. *Agriculture producer's rationality and technical change*. Bombay, Asia Publishing House, 1970.

- DAWAR, G.R. and K. GROVER. "Fertilisers and growth of agriculture", *Kurukshetra*, 21:10 (16 February 1973), 11-12.
- DEEPAK LAL. "Economics of irrigation engineers", *Economic and Political Weekly*, 8:26 (30 June 1973), A-53-5.
- DEIVASIGAMANY, J. "A comprehensive strategy towards land and water management for irrigation projects", *IIPA Bulletin*, 1:1 (October 1975), 1, 4-6.
- DESAI, GUNVANT M. "Factors determining demand for pesticides", *Economic and Political Weekly*, 5:52. (26 December 1970), A-181-3.
- DESAI, GUNVANT M. *Growth of fertilizer use in Indian agriculture, past trends and future demand*. Ithaca, New York, State College of Agriculture and Life Sciences, 1971. (Cornell International agricultural development bulletin 18).
- DHAKA, J.P. and D.S. NANDAL. "Impact of mechanisation on labour utilisation and farm productivity in Rohtak district (Haryana)", *Manpower Journal*, 11:4 (January-March 1976), 75-83.
- DHAWAN, B.D. "Economic of groundwater utilisation: traditional versus modern techniques", *Economic and Political Weekly*, 10:25-26 (21 and 28 June 1975) A-31-42.
- DHAWAN, B.D. "Unutilised potential of state tubewell in U.P.", *Artha Vijnana*, 15:3 (September 1973), 296-304.
- DHAWAN, B.D. "Utilisation of ground water resources: public versus private tubewells", *Economic and Political Weekly*, 9:39 (28 September 1974), A-75-81.
- DHUA, S.P. "Organo-mineral-fertilisers: a necessity for Indian agriculture", *Economic and Political Weekly*, 10:15 (12 April 1975), 619-23.
- DOBBS, THOMAS and PHILIPS FOSTER. "Incentives to invest in new agricultural inputs in North India", *Economic Development and Cultural Change*, 21:1 (October 1972), 101-17.
- DOMMEN, ARTHUR J. "The bamboo tube well: a note on an example of indigenous technology", *Economic Development and Cultural Change*, 28:3 (April 1975), 483-9.
- ERDMAN, HOWARD L. *Politics and economic development in India: the Gujarat State Fertilisers Company as joint sector enterprise*, Delhi, D.K. Pub. House, 1973.
- FERTILISER ASSOCIATION OF INDIA. *Fertiliser production in India*. New Delhi, the Association, 1975.

- FERTILISER ASSOCIATION OF INDIA. *Strategy for fertiliser use under limited availability: a group discussion*. New Delhi, The Association, 1973. (Mimeo.).
- GERA, F.C. "Soil and water management", *Hindustan Times*, (26 September 1975), 7; (29 September 1975), 7.
- GIRDHARI LAL. "Practical aspects of economics of fertilizer use", *Fertilizer News*, 19:3 (March 1974) 23 9.
- GOPALAKRISHNAN, V.S. "Organization for command area administration in India", *Indian Journal of Public Administration*, 19:2 (April-June) 1973, 177-86.
- GREWAL, S.S. and A.S. KAHLOON. "Indian agriculture: mechanisation pattern, policy", *Economic Times*, (29 August 1975), 51.
- GUPTA, J.R. "Technological breakthrough in farm organization", *Rural India*, 38:1 (January 1974), 7-11.
- JAIN, B.K.S. "Transfer of agricultural engineering technology to rural masses", *Economic Times*, (19 February 1976), 5.
- JODHA, N.S. "A case of the process of tractorisation", *Economic and Political Weekly*, 9:50 (14 December 1974) A-111-18.
- JOHAR, R.S. "New farm technology and factors of employment, tenancy: a case study of Amritsar", *Economic Times*, (30 January 1976), 7; (31 January 1976), 5.
- KALE, D.C. "Retreat from self-reliance in technology", *Economic and Political Weekly*, 8:2 (13 January 1973), 56.
- KHAN, WAHEEDUDDIN and R.N. TRIPATHY. *Intensive agriculture and modern inputs—prospects of small farmers: a study in West Godavari district*. Hyderabad, National Institute of Community Development, 1972.
- KHANNA, K.C. "New irrigation policy: back to big and medium projects", *Times of India*, (19 April 1976), 8.
- LOCKWOOD, BRIAN. "Patterns of investment in farm machinery and equipment", *Economic and Political Weekly* 7:44 (30 September 1972), A-113-24.
- MANDAL, G.C. "Observations on agricultural technology in a developing country", *Economic and Political Weekly*, 7:26 (24 June 1972), A-79-82.
- MISHRA, B.L. and D.K. MAROTHIA. "Land saving through fertilizers: an empirical approach", *Eastern Economist*, 65:12 (19 September 1975), 551-5.

- MISHRA, G.P. "Choice of technology in agriculture: problems and implications", *Economic Affairs*, 22:1-2, (January-February 1977), 73-80.
- MISRA, V.N. and S.B.L. GUPTA. "The impact of fertilizer use on resource productivity: a study of an IADP block". *Indian Journal of Economics*, 52:207 (April 1972), 311-25.
- MOHANAN, N. "Technological transition in Indian agriculture", *Cooperative Perspective*, 10:3 (October-December 1975), 49-52.
- MOULIK, T.K. *From subsistence to offence*. Bombay, Popular Prakashan 1977.
- MUKHERJEE, S.K. "Evolving a rational structure of water rates", *Capital*, 175:4388 (13 November 1975), 652-3.
- NAIDU, I.J. "Transfer of agricultural engineering technology to rural masses", *Community Development and Panchayati Raj Digest*, 7:4 (April 1976), 136-40.
- NAIR, N.K. "Contribution of fertilizer to food production in India: some estimates", *Productivity*, 17:1 (April-June 1976), 107-25.
- NIRMAL SINGH and others. "Discriminant analysis of the factors affecting investment in farm machinery in Punjab", *Indian Journal of Economics*, 55:2 (October 1974), 209-14.
- PANDEY, S.M. "Agricultural productivity, adoption of new technology and small farmers: an inter-state analysis", *Productivity*, 16:1 (April-June 1976), 542-53.
- PANDEY, S.M. "New farm technology and small farmers", *Economic Times*, (25 August 1975), 5; (26 August 1975), 5.
- PATEL, ARUN S. *Fertiliser use in Gujarat—a microview. (A study of Baroda and Junagadh districts)*. Baroda, Good Companions, 1973.
- PATEL, S.M. "Need for model irrigation water co-operatives in India", *Economic Times*, (24 December 1975), 5.
- PATTABHIRAM, M. "How to go about irrigation projects", *Hindu*, (23 July 1975), 6.
- PAWAR, JAGANNATHARAO R. and CHANDRAKANT S. KADAM. "Underutilisation of canal water: economic significance. *Economic Times*, (10 September 1975) 5.
- POSGATE, W.D. "Fertilizers for India's green revolution: the shaping of government policy", *Asian Survey*, 14:8 (August 1974), 733-50.
- QURAISHI, M.A. "Fertiliser distribution through institutional agencies", *Kurukshetra*, 21:8 (16 January 1973), 4-6.

- RAO, K.L. *India's water wealth: its assessment, uses and projections*, New Delhi, Orient Longman, 1975.
- RAO, S.K. "Inter-regional variations in agricultural growth, 1952-53 to 1964-65: a tentative analysis in relation to irrigation", *Economic and Political Weekly*, 6:27 (3 July 1971), 1333-46.
- RAYCHAUDHURI, S.P. *Problems of fertiliser use and crop production*. New Delhi, Economic & Scientific Research Foundation, 1975.
- ROY, SHYAMAL. "Fertiliser application on high yielding varieties", *Economic and Political Weekly*, 5:52 (26, 1970), A-175-80.
- ROY, SUBODH KUMAR. "Pre-harvest loss of rice due to field rodents", *Economic and Political Weekly*, 9:26 (29 June 1974), A-66-7.
- SANDHU, HARJIT S. and DONALD E. ALLEN. "The village influence on Punjabi farm modernization", *American Journal of Sociology*, 79:4 (January 1974), 967-80.
- SCHLUTZER, M. and JOHN W. MELLOTT. "New seed varieties and the small farm", *Economic and Political Weekly*, 7:13 (26 March 1972), A-31-8.
- SEN, B. "Capital inputs in Punjab agriculture, 1950-51 to 1964-65", *Economic and Political Weekly*, 5:52 (26 December 1970), A-163-8.
- SIDHU, SURJIT S. "Economics of technical change in wheat production in the Indian Punjab", *American Journal of Agricultural Economics*, 56:2 (May 1974), 217-26.
- SINGH, L.R. and J.P. BHATI. "The arithmetic of farm mechanization", *Eastern Economist*, 58:23 (9 June 1972), 1125-7.
- SINGH, M.L. "Economics of water for irrigation", *Eastern Economist*, 60:7 (16 February 1973), 293-6.
- SINGH, R.D. and P.K. JOSHI. "New agricultural technology and employment", *Eastern Economist*, 65:21 (21 November 1975), 937-9.
- SINGH, R.P. and R.C. SINGH. "Impact of new technology on agriculture production and resources productivity in Eastern Uttar Pradesh", *Indian Journal of Economics*, 53:211 (April 1973), 431-44.
- SUD, SURINDER. "Optimum utilisation of irrigation potential", *Indian Express*, (30 March 1976), 4.

- SWAMINATHAN, M.S. "Correlating farming technology with rural transformation", *Capital*, 175:4379 (4 September 1975), 326:7.
- SWAMINATHAN, M.S. "Science and integrated rural development", *Eastern Economist*, 66:3 (16 January 1976), 92:102.
- SYMPOSIUM on soil and water management held at Hissar, March 11:13, 1969: papers. New Delhi, Indian Council of Agricultural Research, 1972.
- SWAMINATHAN, M.S. New farm technology to get maximum benefit. *Economic Times*, 21 October 1971, p. 5.
- SWAMINATHAN, M.S. Agriculture and nuclear technology. *Point of View*, 15 January 1975, p. 5.+
- TEWARI, S.C. and R.K. SHARMA. "Modern technology in Kangra farms", *Eastern Economist*, 62:18 (3 May 1974), 8902:93.
- TEWARI S.C. and M.V. GEORGE. "Technological changes in agriculture in Punjab", *Indian Journal of Economics*, 53:208 (July 1972), 79-88.
- THIRUVENKATACHARI, K. "Idle capacity in Indian agriculture (resources, inputs and performance of utilization)", *Enterprise*, 4:5 (December 1970), 23-5.
- TRIPATHI, LOKPATI. "U.P.'s giant irrigation problems", *Indian Express*, (22 February 1976), 4.
- TRIPATHY, R.N. "Distribution of benefits of technological advancement in agriculture", *Community Development and Panchayati Raj Digest*, 5:3 (January 1974), 117:32.
- UPADHYAY, M.N. and K. BASU. "Water as input in agriculture", *Economic Times*, (1 November 1975), 5: (3 November 1975), 5.
- VOHRA, B.B. "Guidelines for proper utilisation of water resources", *Socialist India*, 10:12 (23 August 1975), 15:17.
- VON BLANCKENBURG, PETER. "Who leads agricultural modernisation?: a study of some progressive farmers in Mysore and Punjab, *Economic and Political Weekly*, 7:40 (30 September 1972), A-94-111.
- WADE, ROBERT. "Administration and the distribution of irrigation benefits", *Economic and Political Weekly*, 10:44-45 (1 November 1975), 1743:6.
- WADE, ROBERT. "Performance of irrigation projects", *Economic and Political Weekly*, 11:3 (17 January 1976), 63:6.

WADE, ROBERT. "Water accounting in irrigation projects: a technique from Maharashtra", *Economic and Political Weekly*, 11:35 (28 August 1976), p. 1436:9.

WILLIAMS, DONALD A. "Water management in the seven: ties", *Economic and Political Weekly*, 5:26 (June 1970), A-53-60.

AGRICULTURE—FINANCIAL ASPECTS

ACHARYA, S.S. "Green revolution: farm income distribution" *Economic Times*, (12 December 1975), 5; (13 December 1975), 5.

ADYA, J.C. "Lead bank scheme: impact on rural uplift", *Economic Times*, (24 February 1976), 5.

AGARWAL, N.L. and R.K. KUMAWAT. "Potentialities of increasing farm incomes through credit and new technology", *Agricultural Situation in India*, 29:7 (October 1974), 489:94.

AGRICULTURAL REFINANCE AND DEVELOPMENT CORPORATION. *Report of the Committee on Integration of Co-operative Credit Institution*, Bombay, ARDC, 1976.

ANGRISH, A.C. "Agricultural and non-agricultural taxation: an estimate of their burden in Rajasthan", *Economic and Political Weekly*, 5:1 (10 January 1970) 59:66.

ANGRISH, A.C. "Direct agricultural taxes and economic development in India", *Indian Journal of Economics*, 50:199 (April 1970), 383:90.

ANGRISH, A.C. *Direct taxation of agriculture in India: with special reference to land revenue and agricultural income tax*. Bombay, Somaiya Publications, 1972.

BAHADUR, TEJ. "Impact of farm finance and resource productivity in agriculture", *Indian Journal of Economics*, 55:219 (April 1975), 409:20.

BAHADUR, TEJ and MOHD. ABDUL RASHID. "Some aspects of demand for and supply of agricultural credit", *Interdiscipline*, 11:2 (Summer 1974), 102:12.

BANDYOPADHYAY, R. "Growth of institutional finance in agricultural development", In Ashok V. Bhuleshkar (ed.) *Growth of Indian economy in socialism*. Oxford & IBH, Bombay, 1975, 57-80.

BANKER, C.B. and VINAY K. BHARGAVA. "Financing small-farm development in India", *Australian Journal of Agricultural Economics*, 18:2 (August 1974), 101-18.

- BAUM, WARREN C. "Agricultural credit and small farmer", *Indian Finance*, 98:12 (18 September 1976), 279-82.
- BHARGAVA, P.K. "Problems of imposing tax on agricultural holdings", *Capital* (12 July 1973), 1129-30.
- BHARGAVA, P.K. *Taxation of agriculture in India*. Bombay, Vora, 1976.
- BHARGAVA, P.K. and G.S. SRIVASTAVA. "Interstate disparity in direct agricultural tax", *Mainstream*, 14:19 (10 January 1976), 11-13.
- BHARGAVA, P.K. and G.S. SRIVASTAVA. "Tax potential of farm sector", *Eastern Economist*, 66:4 (23 January 1976), 139-42.
- BHATIA, B.M. "Plan for rural banks: coordinating efforts of credit agencies", *Statesman*, (29 August 1975), 4.
- BHATTACHARYA, S.N. "Rural banks and agricultural development", *Eastern Economist*, 67:5 (30 July 1976), 229-34; 67:6 (6 August 1976), 271-5.
- BOHUDE, S.G. and N.M. JOGLEKAR. "Crop insurance to protect farmers under dry farming conditions in Maharashtra", *Journal of Agricultural Economics*, 26:4 (October-December 1971), 307-17.
- CATANACH, I.J. *Rural credit in Western India, 1875-1930: rural credit and the co-operative movement in the Bombay Presidency*. Berkeley, Univ. of California Press, 1970.
- CHAWDHARI, T.P.S. and J.N. SHARMA. *Crop loan system: a study in Andhra Pradesh and Punjab*. Hyderabad, National Institute of Community Development, 1970.
- CHIDAMBARAM, M.A. "Agricultural Refinance Corporation: a development bank", *ARC News*, 3:4 (January-March 1975), 62-6.
- CHOKSI, A.M. "Institutional finance in agricultural development", *Economic Times* (22 November 1975). 9; (24 November 1975), 9.
- CHOUKIDAR, V.V. and M.G. NAIR. "Rural bank and rural uplift", *Economic Times*, (22 March 1976), 5.
- CHOWDHURY, B.K. "Disparity in income in the context of HYV", *Economic and Political Weekly*, 5:39 (26 September 1970), A-90-6.
- DADHICH, C.L. "Farm co-operative credit to scheduled castes and scheduled tribes", *Economic and Political Weekly*, 12:13 (26 March 1977), p A-23-31.

- DADHICH, C.L. "Impact of debt relief measures: a case study", *Economic Times*, (28 December 1975), 5.
- DADHICH, C.L. "Institutional borrowers in Rajasthan: a case study", *Economic Times*, (5 February 1976), 5; (6 February 1976), 5.
- DADHICH, C.L. "Refinance for agriculture", *Economic Times*, (20 December 1976), 5+; (21 December 1976), 7.
- DAHIYA, L.N. "Impact of optimum agricultural and allocation patterns of farm incomes: a study of transitional agricultural economy", *Indian Journal of Agricultural Economics*, 31:1 (January-March 1976), 23-39.
- DANDEKAR, V.M. "Crop insurance in India", *Economic and Political Weekly*, 11:26 (26 June 1976), A-61-90.
- DESAI, D.M. and D.K. DESAI. *Farm production credit in changing agriculture*. Ahmedabad, Indian Institute of Management, 1971.
- DESAI, B.M. and D.K. DESAI. "Is inadequacy of institutional credit a problem in changing agriculture", *Economic and Political Weekly*, 5:39 (26 September 1970), A-101-10.
- DESAI, D.K. and HARI PRAKASH. "Planning and implementation of financing the area development scheme", *Economic and Political Weekly*, 7:13 (25 March 1972), A-13-22.
- DESAI, V.V. "Agricultural credit", *Eastern Economist*, 67:2 (9 July 1976), 82-92.
- DESINGA RAO, N. "Institutional credit to agriculture", *Eastern Economist*, 67:7 (13 August 1976), 323-9.
- DINESH, C. "Short and long-term farm credit: problems of integration", *Economic Times*, (3 March 1977), 5+
- "FACTORS responsible for success or otherwise of rural credit cooperatives in India", *Indian Cooperative Review*, 10:4 (July 1973), 511-25.
- GHATAK, SUBRATA. *Rural money market in India*. Delhi, Macmillan, 1976.
- GOPALAN, MUTHUSWAMI and V. KULANDAISWAMY. "Current trends in rural indebtedness", *Eastern Economist*, 66:17 (23 April 1976), 826-9.
- GOUR, RAJ BAHADUR. "Banking and rural economy", *Mainstream*, 14:35 (1 May 1976), 6-8.
- GUGLANI, P.L. "Infrastructure of rural credit system in India", *Indian Cooperative Review*, 11:2 (January 1974) 205-12.

- GURU, D.D. "Financing coops. in Bihar: 5th plan target and possible achievements", *Economic Times*, (30 January 1976), 7.
- HANUMANTHA RAO, C.H. *Technological change and distribution of gains in Indian agriculture*. Delhi, Macmillan, 1975.
- INDIAN MERCHANTS CHAMBER. *Taxation of agriculture in India*. Bombay, Indian Merchants Chamber, 1971.
- JAIN, S.C. *Management of agricultural finance*. Bombay, Vora, 1970.
- JATI, P.K. and A. TRIPATHY. "Effectiveness of co-operatives in providing services and supplies in I.A.D.P., Sambalpur, Orissa", *Community Development and Panchayati Raj Digest*, 4:4 (April 1973), 193-7.
- JOGINDER SINGH. "Determinants of farm income in Punjab", *Economic Times*, (6 May 1976), 5.
- JOGINDER SINGH. "Farm technology and income distribution", *Economic Times*, (6 April 1976), 5.
- JOHL, S.S. and C.V. MOORE. *Essentials of farm financial management*. New Delhi, Today and Tomorrow, 1970.
- JOHL, S.S. "Improving agricultural taxation in India", *Development Digest*, 11:4 (October 1973), 27-33.
- KABRA, KAMAL NAYAN. "Agriculture and taxation", *Mainstream*, (1 December 1973), 19-20.
- KATHURIA, G. and K. CHANDRASEKHARAN. *Elements of agricultural finance*. Bombay, Progressive Corporation, 1973.
- KHARE, M.P. "A study of income, saving and investment in agriculturally progressive areas in Ahmednagar district (Maharashtra State)", *Artha Vijnana*, 15:3 (September 1973), 231-80.
- KODESIA, J. (ed.). *Agricultural credit in India—an appraisal*. New Delhi, World Agriculture Fair Memorial Farmers Welfare Trust Society, 1974.
- KRISHNASWAMI, O.R. *Co-operative democracy in action: an empirical study of democratic control and management in agricultural co-operative structure in a state in India*, Bombay, Somaiya, 1976.
- KURUP, T.V. NARAYANA. "Price of rural credit: an empirical analysis of Kerala", *Economic and Political Weekly*, 11:27 (3 July 1976), 998-1006.

- KUTUMBA RAO, M. "The case of an integrated cooperative credit structure in India", *Review of International Cooperation*, 69:2 (1976), 47-50.
- LAKDAWALA, D.T. "Direct taxation of agriculture". *Indian Journal of Agricultural Economics*, 30:4 (October-December 1975), 1-15.
- LAL, M.B. "Taxing farm-income for economic growth", *Capital*, (Annual Number 1976, 24 February 1977), 85-9.
- LAVANIA, G.S. and others. "Bank finance to agriculture", *Economic Times*, (9 April 1976), 5.
- LAVANIA, G.S. and others. "Commercial bank finance and efficiency of resource use in agriculture", *Indian Finance*, 99:16 (16 April 1977), p. 397:8.
- LIPTON, MICHAEL. "Agriculture and non-agriculture in institutional credit: a note", *Economic and Political Weekly*, 11:39 (25 September 1976), 1571-2.
- MACHALPURKAR, R.S. "Income tax on agriculture income and tax on agriculture as rent-revenue", *Modern Review*, 131:3 (September 1972), 231-3.
- MADALGI, S.S. "Estimates of farm income in India 1951-52 to 1967-68", *Economic and Political Weekly*, 5:13 (28 March 1970), A-23-32.
- MARIYANATHAN, A.A. "Primary agricultural credit co-operatives: their progress, performance and problems", *Indian Cooperative Review*, 11:1 (October 1973), 53-74.
- MATHUR, B.S. *Land development banking in India*. Delhi, National, 1974.
- MILES, HAROLD A. *A review of the agriculture credit situation in India, with comments*. New Delhi, Ford Foundation, 1971.
- MITRA, AJIT KUMAR. "Development and working of primary agricultural cooperative credit societies in the post-independence period", *Indian Review of Public and Co-operative Economy*, 5:3-4 (May-August 1975), 7-13.
- MOHANA RAO, R.M. and P. JAGANNADHA ACHARLU. "Small farmer and long-term finance", *Economic and Political Weekly*, 7:26 (24 June 1972), A-83-6.
- MUNIRAMAPPA, C.M. "Role of the state banks in farm finance", *Eastern Economist*, (29 January 1971), 203-207.
- NAGAR, S.C. "Financing agriculture in Eastern and North-Eastern States: problems and prospects", *Financing Agriculture*, 6:3 (October 1974), 20-3.

- NARASIMHAN, M. "National agricultural credit policy", *Economic and Political Weekly*, 6:2 (9 January 1971), 97-102.
- NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH. *Credit requirements for agriculture*. New Delhi, NCAER, 1974.
- NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH. *Effectiveness of cooperative credit for agricultural production*. New Delhi, NCAER, 1972.
- OJHA, G. "Effectiveness of cooperative credit for small farmers in Maharashtra", *Cooperative Perspective*, 11:3 (October-December 1976), 19-24
- PAL, BINAY KRISHNA *Agricultural finance in West Bengal*. Calcutta, Firma K.L. Mukhopadhyay, 1973.
- PATEL, A.K. and M.M. SHAH. "Lending schemes for agricultural development", *Farmer and Parliament*, 9:3 (March 1974), 5-6+
- PATHAK, MAHESH T. and ARUN S. PATEL. *Agricultural taxation in Gujarat*. Bombay, Asia, 1970.
- RAGHAVA REDDY, G. "Farm credit: structure and performance", *Eastern Economist*, 65:8 (22 August 1975), 358-65.
- RAHMAN, MAHFOOZUR. *Co-operative credit and agricultural development (a study with reference to Jammu and Kashmir)*. Delhi, S. Chand, 1974.
- RAJ, K.N. and B.R. SINGH. "Income, savings and investment pattern in Hissar", *Eastern Economist*, 611-4 (5 October 1973), 646-9.
- RAJ, K.N. "Direct taxation of agriculture", *Mainstream*, (30 March 1973), 15-18, 29.
- RAJ KRISHAN, "Intersectoral equity and agricultural taxation in India", *Economic and Political Weekly*, 7:31-33 (Special Number: August 1972), 1589-99.
- RAJAKUTTY. "Impact of long-term credit in agriculture: a micro analysis with special reference to land development banks", *Financing Agriculture*, 6:3 (October 1974), 13-15+
- RAJU, V.T. and I.J. SINGH. "Farm income distribution and measures of income inequality", *Agricultural Situation in India*, 29:8 (November 1974), 559-64.
- RAMASWAMY, C. and V. RAJAGOPALAN. "Impact of new technology on the pattern of income distribution among farmers", *Southern Economic Review*, 2:3 (January 1973), 225-37.

- RESERVE BANK OF INDIA. *Report of the Committee on Cooperative Land Development Banks*. Bombay, RBI, 1975.
- RESERVE BANK OF INDIA. *Appendix to the Report of the Committee on Cooperative Land Development Banks*, Bombay, RBI, 1976.
- RESERVE BANK OF INDIA. *Role of cooperative credit in increasing farm production: a survey report*. Bombay, RBI, 1974.
- RESERVE BANK OF INDIA. *Report of the Study Team on Overdues of Co-operative Credit Institutions*. Bombay, RBI, 1974.
- RESERVE BANK OF INDIA. *Studies in agricultural credit*. Bombay, Reserve Bank of India, 1970.
- ROY, BUNKER. "Rural branch of a bank: a miracle in Tilonia", *Economic Times*, (12 January 1976), 5.
- SAXENA, P.S. "Institutional finance: a four-tier study of rural sector", *Indian Finance*, 96:20 (15 November 1975), 392-8.
- SHANMUGASUNDARAM, V. "Taxation of agriculture: a critique of agricultural income taxation", *Madras Development Seminar Series Bulletin*, 6:1 (January 1976), 51-62.
- SHARMA, R.K. and S.C. TEWARI. "Farmers and their credit needs", *Eastern Economist*, 67:4 (23 July 1976), 181-5.
- SHETH, V.K. "Organisational structure for agricultural credit", *Financing Agriculture*, 4:1 (April 1972), 1-6.
- SHUKLA, TARA. "Regional analysis of institutional finance for agriculture", *Indian Journal of Agricultural Economics*, 26:4 (October-December 1971), 542-54.
- SIDDIQI, SALAHUDDIN A. "Commercial banks and agricultural finance", *Indian Finance*, 98:18 (30 October 1976), 421-5.
- SINGH, RAM PRAVESH and NARESH MURTI. "An alternative approach to agricultural taxation", *IIPA Bulletin*, (February 1973), 5-7.
- SIVARAMAN, B. "Agricultural reforms and the support from institutional financing agencies", *Financing Agriculture*, 4:4 (Jan. 1973), 7-11.
- SREEKANTARADHYA, B.S. "Review of regional development direct taxation of agriculture and resource mobilisation in Karnataka", *Southern Economic Review*, 5:1 (July 1975), 51-76.

TOKHI, M.R. and D.P. SHARMA (eds.). *Rural banking in India*. New Delhi, Oxford and IBH, 1975.

AGRICULTURAL DEVELOPMENT

ABEL, MARTIN E. "Agriculture in India in the 1970s", *Economic and Political Weekly*, 5:13 (28 March 1970), A-5-14.

ADAMS, JOHN. "Agricultural growth and rural change in India in the 1960's", *Pacific Affairs*, 43:2 (Summer 1970), 189-202.

AHMED, FAKHRUDDIN ALI. "New dimensions of the green revolution", *Eastern Economist*, (29 January 1971), 215-16.

ARAKERI, H.R. "Green revolution: its potentialities and problems", *Agricultural Situation in India*, 27:10 (January 1973), 663-8.

ARORA, R.C. *Development of agriculture and allied sectors: an integrated area approach*. New Delhi, S. Chand, 1976.

BARDHAN, KALPANA and PRANAB BARDHAN. "The green revolution and socio-economic tensions: the case of India", *International Social Science Journal*, 25:3 (1973), 285-92.

BHATTACHARYA, PRANAB and ABDUL MAJID, Jr. "Impact of green revolution on output, cost and income of small and big farmers", *Economic and Political Weekly*, 11:52 (25 December 1976), p. A-147-50.

BOSE, A.N. "West Bengal C.A.D.P.: problems of implementation", *Mainstream*, 13:51 (23 August 1975), 11-14+

BROWN, DORRIS D. *Agricultural development in India's districts*. Cambridge, Mass., Harvard University Press, 1971.

CENTRE FOR THE STUDY OF SOCIAL CHANGE. *Green revolution the unfinished task*. Calcutta, Minerva, 1974.

CHAKRAVARTI, A.K. "Green revolution in India", *Annals of the Association of American Geographers*, 63:3 (September 1973), p. 319-30.

CHATTOPADHYAY, MANABENDU and ASHOK RUDRA. "Size-productivity revisited", *Economic and Political Weekly* 11:39 (25 September 1976), A-104-16.

CHATTOPADHYAY, PARESH. "On the question of the mode of production in Indian agriculture: a preliminary note", *Economic and Political Weekly*, 7:13 (25 March 1972), A-39-46.

- CHAUDHURI, PRAMIT, (ed.). *Readings in Indian agricultural development*. London, Allen and Unwin, 1972.
- COOMBS, PHILIP H. India's intensive agriculture district program (IADP)". In: *Attacking rural poverty*, by Philip H. Coombs. Baltimore, John Hopkins University Press, 1974.
- CRITCHFIELD, RICHARD. "Punjab, Bengal and the green revolution", *Nation*, (31 January 1972), 134-8.
- DASGUPTA, BIPLAP. "India's green revolution", *Economic and Political Weekly*, 12:6, 7 and 8 (Annual Number 1977), 241-60.
- DEB, P.C. and B.K. AGARWAL. *Rural leadership in green revolution*. Delhi, Research Publications, 1974.
- DESAI, MAHENDRA D. "Small Farmers' Development Agency: experience in Surat District", *Economic and Political Weekly*, 9:31 (3 August 1974), 1245-55.
- DESAI, VASANT *Agricultural development: a case study*. Bombay, Popular Prakashan, 1976.
- DEY, AMAL KRISHNA. "Green revolution contrasts: rice and wheat", *Economic and Political Weekly*, 12:23 (4 June 1977), p. 921-4.
- DEY, AMAL KRISHNA. "Rates of growth of agriculture and industry", *Economic and Political Weekly*, 10:25-26 (21 and 28 June 1975), A-26-30.
- DHARM NARAIN. "Growth and imbalances in Indian agriculture", *Economic and Political Weekly*, 7:13 (25 March 1972), A-2-6.
- DOVRING, FOLKE. "Macro constraints on agricultural development in India", *Indian Journal of Agricultural Economics*, 27:1 (January-March 1972), 46-66.
- FRANKEL, FRANCINE R. *India's green revolution: economic gains and political costs*. Princeton, N.J. Princeton Univ. Press, 1971.
- GARTRELL, JOHN W. "Status, inequality and innovation: the green revolution in Andhra Pradesh, India", *American Sociological Review*, 42:2 (April 1977), p. 318-37.
- GOA, DAMAN and DIEU. BUREAU OF ECONOMICS, STATISTICS and EVALUATION. *An evaluation of the marginal farmers and agricultural labourers development agency, Goa, 1974-75*. Panaji, The Bureau, 1976.
- GREWAL, S.S. and BALWINDER SINGH. "Green revolution: a perspective", *Agricultural Situation in India*, 30:8 (November 1975), 565-8.

- HUTCHINSON, JOSEPH. "The strategy of agricultural development", *Eastern Economist*, 54:16 (17 April 1970), 740-44.
- INDERJIT SINGH and RICHARD H. DAY. "A micro-econometric chronicle of the green revolution", *Economic Development and Cultural Change*, 23:4 (July 1975), 661-86.
- INDIA. MINISTRY OF AGRICULTURE, DIRECTORATE OF ECONOMICS AND STATISTICS. *Progress of agriculture in India*, Delhi, Manager of Publications, 1972.
- INDIAN ECONOMIC ASSOCIATION. *Economics of green revolution*. Bombay, Popalar Prakashan, 1971.
- JAISWAL, N.K. "Coordination in agricultural development programmes", *Behavioural Sciences and Community Development*, 11:1 (March 1977), 22-32.
- JUNANKAR, P.N. "Green revolution and inequality", *Economic and Political Weekly*, 10:13 (29 March 1975), A-15-77.
- JUYAL, B.N. "People's participation in agricultural development programme: two case studies", *Interdiscipline*, 8:4 (Winter 1971), 43-78.
- KAHLON, A.S. "Green revolution: some lessons from Indian experience", *Agricultural Situation in India*, 31:1 (April 1976), 3-5.
- KAMAT, G.S. "Small farmers' development agencies: a review", *Khadi Gramodyog*, 22:9 (June 1976), 408-11.
- KOTHARI, SHANTI. "Directions in agricultural development", *Indian Journal of Public Administration*, 21:1 (January-March 1975), 48-52.
- LADEJINSKY, W. "Ironies of India's green revolution", *Foreign Affairs*, 38:4 (July 1970), 758-68.
- LAL, M.B. "The Pant Nagar Farm: success of integrated area approach", *Statesman*, (15 December 1974), 4.
- MANDAL, G.C. *Economics of the green revolution: a study in East India*, by G.C. Mandal and M.G. Ghosh. Bombay, Asia, 1976.
- MATHUR, J.C. "Intergrated agricultural area development", *Voluntary Action*, 15:4-5 (July-October 1973), 3-9.
- MEHROTRA, S.R. and C.R. BISHNOI. "Food grain output in Rajasthan: trend and analysis", *Economic Times*, (24 April 1976), 5.
- MICHALSKI, K.J. "Green revolution in India", *Mainstream*, 8:45 (11 July 1970), 17-22.

- MICHIE, ARUNA N. "Structural inequality and agrarian change", *Development Policy and Administration Review*, 2:1 (January-June 1976), 9-38.
- MISHRA, G P. "The green revolution: changes and challenges", *Eastern Economist*, 59:13 (29 September), 692-700.
- MISRA, V.N. "Some economic factors and population pressure in crop output growth in Gujarat: an inter-district analysis", *Artha Vijnana*, 16:4 (December 1974), 419-40.
- MUJUMDAR, N.A. "Intra-sectoral dualism and agricultural growth", *Economic and Political Weekly*, 5:13 (28 March 1970), A-2-4.
- MUKHERJEE, P.K. "The HYV programme: variables that matter", *Economic and Political Weekly*, 5:13 (28 March 1970), A-15-22.
- MURTHY, R.V. "The genesis of green revolution", *Eastern Economist*, (22 January 1971), 173-4.
- NAG, A. "Raising productivity is key to farm development", *IIPA Bulletin*, (March 1973), 5-7.
- NATH, V. "Agricultural growth in 1970's: an analysis", *Economic and Political Weekly*, 5:52 (26 December 1970), A-134-44.
- NATIONAL ACADEMY OF SCIENCES. *Symposium on green revolution, held at Nagpur, 1974*. Allahabad, NAS, 1974.
- NATIONAL INSTITUTE OF COMMUNITY DEVELOPMENT. *Papers and proceedings of the workshop-cum-seminar on rural institutions and agricultural development*. ed. by Waheduddin Khan. Hyderabad, NICD, 1972.
- OJHA, GYANESHWAR. "Small farmers and HYV programme", *Economic and Political Weekly*, 5:14 (4 April 1970), 603-5.
- PANDEY, S.M. and RAJENDRA PRASAD. "Population pressure and agricultural development: regional analysis", *Productivity*, 15:4 (January-March 1975), 453-63.
- PARTHASARATHY, G. *Green revolution and the weaker sections*. Bombay, Thacker, 1971.
- PATNAIK, MADAN MOHAN. "Agricultural development in Bihar", *Eastern Economist*, 65:10 (5 September 1975) 453-5.
- PRAKASA RAO, V.L.S. *Development strategy for an agricultural region: a case study on Muzaffarnagar Dist. of U.P.* Mysore, Institute for Development Studies, University of Mysore, 1977.

- RAGHAVA RAO, D.V. "Institutional framework for agricultural development in tribal areas", *Community Development and Panchayati Raj Digest*, 6:3 (January 1975), 145-50.
- RAJ, K.N. "Agricultural development and distribution of land holdings", *Indian Journal of Agricultural Economics*, 30:1 (January-March 1975), 1-13.
- RAJ KRISHNA. *Economics of green revolution*. Bombay, Popular Prakashan, 1972.
- RAKESH MOHAN and ROBERT E. EVENSON. "The intensive agricultural districts programme in India: a new evaluation", *Journal of Development Studies*, 11:3 (April 1975), 135-54.
- RAMINDAR SINGH and FRANK A. WILSON. "Evaluation of agricultural development: an alternative approach", *Economic and Political Weekly*, 9:16 (20 April 1974), 641-8.
- RANDHAWA, M.S. and others. *Green revolution: a case study of Punjab*. Delhi, Vikas, 1974.
- RANDHIR SINGH. "Agricultural development after independence", *Socialist India*, 11:2 (14 June 1975), 11-12; 11:4 (28 June 1975), 20-21; 11:5 (5 July 1975), 23-4.
- RESERVE BANK OF INDIA. *Marginal farmers and agricultural labourers development agencies. 1973 (A field study)*. Bombay, RBI, 1976.
- ROY, RAMASHRAY. *Bureaucracy and development: the case of Indian agriculture*. New Delhi, Manas, 1975.
- SACHCHIDANANDA. *Social dimensions of agricultural development*. Delhi, National, 1978.
- SAINI, G.R. "Green revolution and the distribution of farm incomes", *Economic and Political Weekly*, 11:13 (27 March 1976), A-17-22.
- SARVESWARA RAO, B. and T.V.S. RAO. "Institutional framework for agricultural development", *Community Development and Panchayati Raj Digest*, 6:3 (January 1975), 151-7.
- SEN, B.R. "Indian scene against back-drop of indicative world plan for agricultural development", *Indian and Foreign Review*, 7:17 (15 June 1970), 9-11; 7:18 (1 July 1970), 13, 16-17.
- SEN, BANDHUDAS. *The green revolution in India: a perspective*. N.Y., Wiley, 1974.

- SEN, SAMAR RANJAN. *Growth and instability in Indian agriculture*. Calcutta, Firma K.L. Mukhopadhyaya, 1971.
- SEN, SUDHIR. *Reaping the green revolution*. New Delhi, Tata McGraw-Hill, 1975
- SHAH, S.M. "Indian agriculture in 2001", *Eastern Economist*, 67:14 (1 October 1976), 655-7.
- SHARMA, SANTOSH K. "Green revolution in India: an appraisal", *Journal of the National Academy of Administration*, 17:2 (June 1972), 322-33.
- SHER SINGH. "Collector's role in agricultural development", *Journal of the National Academy of Administration*, 17:2 (June 1972), 287-91.
- SINGH, SHRINATH. *Modernisation of agriculture (a case study in Eastern Uttar Pradesh)*. New Delhi, Heritage, 1976.
- SIVARAMAN, B. "Changing perspectives of agricultural development", *Journal of the National Academy of Administration*, 17:2 (June 1972), 292-302.
- SIVARAMAN, B. "Intensive Agriculture and its programs", *Journal of the National Academy of Administration*, 17:2 (June 1972), 308-21.
- SRIVASTAVA, UMA K. and VISHNUPRASAD NAGADEVARA. "On the allocative efficiency under risk in transforming traditional agriculture", *Economic and Political Weekly*, 7:26 (24 June 1972), A-73-9.
- SWAMINATHAN, M.S. "Agricultural self-sufficiency", *Agricultural Situation in India*, 31:2 (May 1976), 69-61.
- SWAMINATHAN, M.S. *Our agricultural future*. New Delhi, All India Radio, 1973. (Sardar Patel Memorial Lectures, 1973).
- TANDON, B.C. "The choice of a new strategy for agricultural development", *Indian Journal of Economics*, 53:21 (January 1973), 327-38.
- TRIPATHY, R.N. and R.N. HALDIPUR. "The impact of community development on green revolution", *Community Development and Panchayati Raj Digest*, 3:4 (April 1972), 281-92.
- TYAGI, B.N. "A study of the impact of green revolution on the regional development of agriculture in Uttar Pradesh", *Indian Journal of Agricultural Economics*, 29:4 (October-December 1974), 44-50.

- VERMA, S.K.C. *Green revolution in Indian agriculture*. Patna, Bharati Bhawan, 1972.
- WILCOX, ROBERT W. "The agricultural development process: examples of Indian experience", *Voluntary Action*, 14:6 (November-December 1972), 6-10.
- WILIS, IAN R. "Green revolution and agricultural employment and incomes in Western U.P.", *Economic and Political Weekly*, 6:13 (27 March 1971), A-2-10.

AGRICULTURAL MARKETING AND FOOD SUPPLY

- AGARWAL, N.L. and others. "Marketing problems of small farmers in Rajasthan", *Economic Times*, (2 April 1976), 5.
- BALASUBRAMANIAN, V. "Implementing wheat policy", *Hindustan Times*, (3 July 1974), 5.
- BHALLA, G.S. and UDHAM SINGH. "Public distribution and new wheat policy", *Mainstream*, 12:40-41 (28 June 1974), 13-16.
- BHATIA, B.M. "Agricultural prices: letting the farmer earn a profit", *Statesman*, (5 February 1976), 6.
- BHATIA, B.M. "Agricultural prices: redefining the Commission's task", *Statesman*, (17 February 1976), 8.
- BHATIA, B.M. "Food price policy: incentive to increased production", *Statesman*, (1 February 1975), 6.
- BIHAR INSTITUTE OF ECONOMIC DEVELOPMENT. *Agricultural marketing in Bihar*. Patna, the Institute, 1974.
- CHAKRAVARTI, A.K. "Foodgrain sufficiency patterns in India", *Geographical Review*, 60:2 (April 1970), 208-28.
- CHATTOPADHYAYA, P. "Agricultural pricing: need to remove anomalies", *Capital*, 176: 4408 (8 April 1976) 552-6, 571.
- GADGIL, P.G. "Extent of cooperativization in the marketing of agricultural procedure", *Cooperative Perspective*, 11:2 (July 1976), 13-16.
- GHATAK, SUBRATA. Marketed surplus in Indian agriculture: theory and practice, *Oxford Bulletin of Economics and Statistics*, 57:2 (May 1975), 53.
- GULATI, I.S. and T.N. KRISHANAN. "Public distribution and procurement of foodgrains: a proposal", *Economic and Political Weekly*, 10:21 (24 May 1975), 829-42.
- GUPTA, A.P. *Marketing of agricultural produce in India*. Bombay, Vora, 1975.

- GUPTA, R.P. *Agricultural prices in a backward economy*. Delhi, National, 1973.
- GUPTA, V.K. and D.P. MATHUR. *Wheat production, marketing, and procurement* (CMA Monograph No. 58). Ahmedabad, Indian Institute of Management, 1976.
- INDIA. COMMITTEE ON COST OF HANDLING OF FOODGRAINS. *Report of the Committee on Cost of Handling of Foodgrains by Food Corporation of India*. New Delhi, Department of Food, 1974.
- JAIN, S.C. *Principles and practice of agricultural marketing and prices*. Bombay, Vora, 1971.
- JHA, B.V. *Agricultural price stabilization in India*. Calcutta, Shot Publications, 1971.
- KAPDE, M.V. "Agricultural prices and marketing cooperatives", *Cooperative Perspective*, 10:3 (October-December 1975), 53-9.
- KRISHNASWAMY, L. "Behaviour of market arrivals of foodgrains in Rajasthan", *Agricultural Situation in India*, 30:1 (April 1975), 15-21.
- LELE, UMA J. *Food grain marketing in India: private performance and public policy*. Bombay, Popular Prakashan, 1973.
- McLAREN, SANDRA. "Co-operative marketing societies: case studies in Marathawada", *Economic and Political Weekly*, 9:39 (28 September 1974), A-82-91.
- MITRA, ASHOK K. "Dualism in farm pricing", *Economic Times*, (7 January 1976), 5; (19 January 1976), 5.
- MOORE, JOHN R. and others. *Indian foodgrain marketing*. New Delhi, Prentice-Hall of India, 1973.
- NADKARNI, M.V. *Agricultural prices and development with Stability*, Delhi, National, 1973.
- NADKARNI, M.V. "Grain procurement policy: socialised market mechanism", *Economic Times*, (12 December 1975), 5.
- OWEN, WILFRED. "Transport and agriculture in India", *Development Digest*, 8:1 (January 1970), 22-6.
- PANIKULANGARA, VINCENT. "Paddy procurement through producer levy: a case study of Kerala", *Social Scientist*, 4:8 (March 1976), 44-55.
- PATEL, M.S. "Cooperative marketing in India : its problems and prospects", *Review of International Cooperation*, 62:2 (1976), 51-6.

- PATNAIK, UTSA. "Contribution to the output and marketable surplus of agricultural products by cultivating groups in India, 1960-61", *Economic and Political Weekly*, 10:52 (27 December 1975), A-90-100.
- RAJBANS KAUR. *Agricultural price policy in economic development*. Delhi, Kalyani Publishers, 1975.
- RAJENDRA PRASAD. "Agricultural marketing", *Eastern Economist*, 67:24 (10 December 1976), 1137-9.
- RAM SARAN. "Management of mass consumption with special reference to foodgrains", *Agricultural Situation in India*, 29:10 (January 1975), 739-42.
- RAO, V.M. *Second India studies—food*. Delhi, Macmillan, of India, 1975.
- RUDRA, ASHOK and MADAN MOHAN MUKHOPADH-YAY. "Marketing behaviour of big, medium and small farmers", *Economic and Political Weekly*, 8:27 (7 July 1973), 1199-1202.
- SANDEE, J. and G.R. SAINI. "Towards a more stable grain price policy", *Economic and Political Weekly*, 9:50 (14 December 1974), A-106-10.
- SUD, SURINDER. "Problems of procurement", *Indian-Express*, (2 June 75), 4.
- THAKUR, D.S. "Foodgrain marketing efficiency: a case study of Gujarat", *Indian Journal of Agricultural Economics*, 29:4 (October-December 1974), 61-74.
- TYAGI, D.S. *Farmer's response to agricultural prices in India*. Delhi, Heritage Publishers, 1974.